

## Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

5 &lt;400&gt; PreSequenceString :

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attcaaacca	aagaagctaa	cgttaatctc	ggggatcttt	atacgcgcaa	tctgcaacaa	180
cctgggtctg	catctggctg	gcacaatatt	actttgtcat	taaccgattg	tccggctgaa	240
acaagtgcag	tgacggcaat	cgtgacaggt	tcaactgaca	atacgggtta	ttacaaaaat	300
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aatggcgata	gcaaaacggt	tattgttgat	gagatcactc	gtaatgcaca	gtttccactt	420
aaggcaagag	ctatcacggt	gaatggaaac	gcaagccagg	gaacgatcga	ggcgctaatac	480
aatgtgatct	acacctggca	ataa				504

15 &lt;212&gt; Type : DNA

&lt;211&gt; Length : 504

SequenceName : SEQ ID 431

SequenceDescription :

## 20 Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

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tctaccgaga	ctttatcggt	tactcctgac	aacataaatg	cggacattag	tcttggaact	120
ctgagcggaa	aaacaaaaga	gcgtgtttat	ctagccgaag	aaggaggccg	aaaagtcagt	180
caactcgact	ggaaattcaa	taacgctgca	attattaaag	gtgcaattaa	ttgggatttg	240
atgccccaga	tatctatcgg	ggctgctggc	tggaacaatc	tccggacccg	aggtggcaat	300
atggctgatc	aggactggat	ggattccagt	aaccccggaa	cctggacgga	tgaaagtaga	360
caccctgata	cacaactcaa	ttatgccaac	gaatttgatc	tgaatatcaa	aggtctggctc	420
ctcaacgaac	ccaattaccg	cctgggactc	atggccggat	atcaggaaag	ccgttatagc	480
tttacagcca	gaggtgggtc	ctatatctac	agttctgagg	agggattcag	agatgatatac	540
ggctccttcc	cgaatggaga	aagagcaatc	ggctacaaac	aacgttttaa	aatgccctac	600
attggcttga	ctggaagtta	tcgttatgaa	gattttgagc	taggtggcac	atttaaatac	660
agcggctggg	tggaagcatc	tgataacgat	gagcactatg	accagggaaa	aagaatcact	720
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gtaacaccta	acgcaaaagt	ttatgttgaa	ggcacatgga	atcgggttac	gaataaaaaa	840
ggtaataactt	catcttatga	tcacaatgat	aaactttcag	actacagcaa	aaatgggtgca	900
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40 &lt;212&gt; Type : DNA

&lt;211&gt; Length : 954

SequenceName : SEQ ID 432

SequenceDescription :

## 45 Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

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gatacaggaa	cgtattccgg	ctccgtttac	accgtgaaac	gggggggatac	gctatatcgt	180
atttcgcgca	ccacgggaac	cagcgtaaaa	gagctggcgc	gactgaacgg	catttccccc	240
ccttacacca	ttgaagtgtg	tcagaaacta	aaactgggtg	gggcgaaaag	tagcagtagt	300
acacgtaaat	caaccgcaa	atcaacgacc	aaaaccgcat	cggttacacc	gtcatcagcg	360
gtaccgaaat	cttcctggcc	gccagtaggg	caacgttggt	ggttatggcc	aacgacaggg	420
aaagttatca	tgccgtattc	gacagcagat	ggcggcaata	aagggttgga	tatctcagct	480
ccacggggta	caoctattta	cgccgcgggt	gcaggaaagg	tggtgtatgt	gggcaaccag	540
ctgcgtggct	acggtaatct	catcatgatt	aaacacagtg	aagattacat	tacggcttac	600
gcccataatg	acacgatgct	ggtaataaat	gggcaaaagc	tgaaggctgg	gcaaaaaatc	660
gccaccatgg	ggagcacgga	tgccgcatct	gttcgcctgc	atttccagat	tcgttaccgt	720
gcaacggcaa	ttgatccgct	acgttacttg	ccgcctcagg	gcagcaagcc	aaaatgctga	780

65 &lt;212&gt; Type : DNA

&lt;211&gt; Length : 780

SequenceName : SEQ ID 433

SequenceDescription :

## Sequence

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5 <213> OrganismName : Escherichia coli O157:H7  
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 aaggttaaaag acctgacgcc cggcggaactg accgctgagt cctatgacga cagttatctc 180  
 gatgatgaag atgcgggactg ggccgcgacc ggacaggggc agaaatccgc tggagatacc 240  
 10 agcttcacgc tggcgtggat gcccggaag caggggcagc aggcgctgct ggcggtggtt 300  
 aatgaagggtg ataccctgct ctataaaaatc cgcttccoga acggcacggc cgatgtgttc 360  
 cgcggtctggg tcagcagtat cggtaaggcg gtgacggcga aggaagtgat caccgcacg 420  
 gtgaaagtca ccaacgtggg acgtccgtcg atggcagaag atcgacgac ggtaacacgc 480  
 gcaaccggca tgaccgtgac gctgcccagc acctcggtgg tgaaagggca gagcacgacg 540  
 15 ctgaccgtgg cattccagcc ggaaggcgca accgacaaga gcttccgtgc ggtgtctgcg 600  
 gataaaacaa aagccaccgt gtccgtcagt ggatgacca tcaccgtgaa aggtgtgtct 660  
 gcaggcaagg tcaacattcc ggtcgtatcc ggtaatggtg agtttgctgc ggttgcagaa 720  
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 <212> Type : DNA  
 20 <211> Length : 741  
 SequenceName : SEQ ID 434  
 SequenceDescription :

## Sequence

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25 <213> OrganismName : Escherichia coli O157:H7  
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 actgtctgaaa ctatggataa ggcggaatat ctgcccctgg actgcacat caaggaagtg 120  
 30 cagttcacgc ccgggcagaa acaggatatt gatgtgacca cgctctgctc cacagagcag 180  
 gagaacatca atggtctggg ggctgctgct gagatttcca tgcgggcaa tttttatctg 240  
 aatcaggccc agaaccgctt gcgtgatgcc tatgacaatg acgcgttgta tgcgtttaag 300  
 gtgctgtttc cgctccgtaa gggctttaa ttcctggcgg aagtgcgcca gcacacctgg 360  
 tcattccggt ccaacggcgt ggtggctgca acgttctcac tgcgtctgaa aggcaaacgc 420  
 35 gtgtcctttg tggtagcgtt ggcgtttgtg aaaaatctgg ataagacact taccgtgaat 480  
 accggtgcgc tgctgacaat gtcagtcagt gccaacgggg gaacgcccgc gtataaatac 540  
 gcttggaaga aggatggta cccggttgac gggcagacga cagacacctt cagtaagcca 600  
 ggtgcgcagt ccgctgatgc ggggaaatat acctgtgttg tgaccgattc ggagagaaaa 660  
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 <212> Type : DNA  
 <211> Length : 717  
 SequenceName : SEQ ID 435  
 SequenceDescription :

## Sequence

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45 <213> OrganismName : Escherichia coli O157:H7  
 <400> PreSequenceString :  
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 atgcattata tgagtataaa cgacagtaaa gatggcgacc agagttatat ccgttttggt 180  
 tttaaaggcg aaacacaaat taacgatcaa ctgactgggt atggctcgtt ggaagcggag 240  
 50 tttgccggaa ataaagcggg gagtgatact gcacagcaaa aaacgcgtct cgcttttgcc 300  
 ggattgaagt ataaagattt gggttctttc gactatggcc gtaacctggg cgcgttgtat 360  
 gacgtggaag cctggaccga tatgttcccg gaatttggtg gcgactcctc ggcgacagac 420  
 gacaacttta tgaccaaacg cgccagcggc ctggcgacgt atcggaacac cgactttctc 480  
 ggctgttatcg atggcctgaa cttaaccctg caatatcaag ggaaaaacga aaaccgcgac 540  
 gttaaaaagc aaaacggcga tggcttcggc acgtcattga catatgactt tggcggcagc 600  
 60 gatttcgccca ttagtggggc ctataccaac tcagatcgca ccaacgagca gaacctgcaa 660  
 agccgtggga caggcaagcg tgcagaagct tgggctacag gtctgaaata cgatgccaat 720  
 aatatttatc tggaaacttt ttattctgaa acacgcacaa tgacgccaat aactggcggc 780  
 tttgccataa agacacagaa ctttgaagcg gtcgctcaat accagtttga ctttggtctg 840  
 cgtccatcgc tgggttatgt cttatcgaaa gggaaagata ttgaaggtat cgggtgatgaa 900  
 65 gatctgggtca attatatcga tgtcggggct acatattatt tcaacaaaaa tatgtcagcg 960  
 tttgttgatt ataaaatcaa ccaactggat agcgataaca aattgaatat taataatgat 1020  
 gatattgtcg cgggtggcat gacctatcag ttttaa 1056

<212> Type : DNA  
<211> Length : 1056  
SequenceName : SEQ ID 436  
SequenceDescription :  
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<213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :  
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ttattaaata gcgctcaggg ccaaaactct tataaagatc cgagctataa cgatgacttt 180  
ggtattgaaa caccctcagc gttagataac tttactcagg ccatccagtc acaaatttta 240  
ggtggggtac tgtcgaatat taataccggg aaaccggggc gcatgggtgac caacgattat 300  
15 attggttgata ttgctaaccg cgatgggtcaa ttgcagttga acgtgacaga tcgtaaaacc 360  
ggacaaacct cgaccatcca gggttcgggt ttacaaaata actcaaccga tttttaa 417  
  
<212> Type : DNA  
<211> Length : 417  
20 SequenceName : SEQ ID 437  
SequenceDescription :  
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25 <213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :  
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ctgcactact tctctgatga tgctagcagc gatggcgaca tgcatatgc ccgtatcggt 180  
30 ttcaaagggtg aaactcagat cgctgaccaa ttcactgggt atggtcagtg ggaatttaac 240  
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gacgtagaag catggaccga tatgctgccg gaatttggtg gagataccta tgctggcgct 420  
gacaacttca tgaacgggtc tgctaaccagc gtagcaacct atcgtaacaa tggttttctt 480  
35 ggtcaagttg atgggtctgaa ctttgcactc cagtatcagg gtaacaacga gaaaagcgga 540  
ttatttgatc aagaagggtc aggtaacggg aatggacgta aacttgctaa agagaacggc 600  
gacgggtcag tatgtccact tcctatgact ttgactttgg ttttaa 645  
<212> Type : DNA  
<211> Length : 645  
40 SequenceName : SEQ ID 438  
SequenceDescription :  
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45 <213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :  
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gtaaaaattg agaaaaacag caacgcggta attaaataca ccggttccct gtcaacttta 120  
caacttcacg atggtaacgt gaataacagc ggtattgcgt cggcgcgcggt taacgctcag 180  
50 ggcgatgcgg tattcaataa ccttgcaggg ggcgagggcg gttaaaggcg gattctctat 240  
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aatgccggga cgctggatat tgacgataag tcaacgttca acaacagcgg caaactcatc 360  
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55 ggcgccagcg agtttattaa caaggcggtg gtggatgcga aagtcaccgt ggcggtagt 540  
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accaacgttg acggcagcgc cggtaaaactg aaggtcaaca acgccagcat gaatgggtgc 1200  
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5  gtggaaggca tcaacctgac cgacgccgat gccatcacct caacgtccgt ggtatggacc 1320
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   tcgctgaatc tggatgcgta tcaactggaa gaggacggca tcagcgacaa aggcgtgatg 2400
20 ctgaacttta agaaaacggt ctaa
   
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<212> Type : DNA

<211> Length : 2424

SequenceName : SEQ ID 439

SequenceDescription :

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Sequence

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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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   actcgggtga aagttcattc ccttttttct ccaggctcgt cgaatgttaa tgcgagaacg 180
   atttttaatg tgagcagcca ggtgacttca tttactccct ctgctccggc accgcgcgca 240
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40  tatgaaaaat cgaaaggctc tgaggcttta ggttttaagc ccgcccgtca ggcaccaccg 660
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<212> Type : DNA

<211> Length : 747

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SequenceName : SEQ ID 440

SequenceDescription :

Sequence

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50 <213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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   gccagcgaga acttacaggc gcctggcggt tcgacctatca ccgcagatga aatccgcaaa 180
55  aaccccggtt cccgcgatgt ttcggagatc atccgtacca tgccaggcgt taacctgacc 240
   ggtaactcca ccagtggtoa gcgagggaat aaccgacaga ttgatattcg cggtaggggt 300
   ccggaaaaca cgctgatttt gattgacggc aagccggtaa gcagccgtaa ctcggtgcgt 360
   cagggtctgg gtggcgagcg cgataccggt ggtgatacct cctgggtgcc acctgaaatg 420
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60  ggcggcggtg ttaacatcat taccaaaaaa ggcagcgggc agtggcacgg ctccctgggac 540
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   caggctgacg cgtgggatat caaccagggt catcagtcgg cgcggtgccg aacgtatgcc 720
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   gatgaacca accgcctgta tcgccagaac tactcgctga cctggaacgg tggctgggat 960
   
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aaccggcgtga ccaccagcaa ctgggtgcag tacgaacaca cccgtaactc gcgtattccg 1020
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20 ttcgacaaac gtttctggcg tgcgggtaat gccagacca cgggcgattt ggccggggcc 2160
aactatatcg ccggtgcggg ggcgtatacc tataacgagc cgggacgtac gtggtatatg 2220
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<212> Type : DNA

<211> Length : 2241

25 SequenceName : SEQ ID 441  
SequenceDescription :

Sequence

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30 <213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
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35 cctgacagcc gttctttgat cgtgggtgaa gaacaatggt catacactat gtataacagc 240
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40 <212> Type : DNA
<211> Length : 396
SequenceName : SEQ ID 442
SequenceDescription :

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Sequence

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45 <213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
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tcogtagctg cgacttctac cgtaactggc ggttacgcac agagcgacgc tcaggggcaa 120
50 atgaacaaaa tggcggtttt caacctgaaa taccgctatg aagaagacaa cagcccgctg 180
ggtgtgatcg gttcattcac ttacaccgag aaaagccgta ctgcaagctc tggtgactac 240
aacaaaaacc agtactacgg catcactgct ggtccggcct accgcattaa cgactgggca 300
agcatctacg gtgtagtggg tgtgggttat ggtaaattcc agaccactga ataccggacc 360
tacaaacacg acaccagcga ctacggtttc tcctacgggt ctgggtctgca gttcaacccg 420
55 atggaaaaacg ttgctctgga cttctcttac gacgagagcc gtattcgtag cgttgacgta 480
ggcacctgga ttgccggtgt tggttaccgc ttctaa 516
60 <212> Type : DNA
<211> Length : 516
SequenceName : SEQ ID 443
SequenceDescription :

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Sequence

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65 <213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atgaagagta tagcaacact ggttgtgtgt gcaatctccg ggattgcctg tgtaaattta 60
tctgcacatg cagcagaagg agagcatata atttctcttg ggtatgcgca ctttcagttt 120

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ccgggactga aggattttgt aaaggatgcg actgctcata acagggagac tttcagtcac 180
ttcgtcaaca gaaactactt ttcttcattg ggcgaaatata cagatgggtcg ggtcagtgga 240
tatgaaggca aggataaaaa tcacacagggc attaatatca ggtatcgcta cgagataacg 300
gatgattttg gcgttatcac ctcttttaca tggacgcgtt ctctcactaa ctacacagaca 360
5 tttattgatg tgcagtacgc cgatcatacc aggaagatta agaatccggc agcttctgcc 420
agaacggata tcagggcgaa ttactggagt ctgttagcgg ggcccttcacg gcgggttaat 480
cagtacatga gtttatatgc gatggcaggg atgggcggtg ctaaagttag cgctgacctg 540
aaaattaagg acaatattaa cagtagtggc ggattttctg aaagcaacag cacgaaaaaa 600
acctcccttg cgtgggctgc aggtgcacag tttaacctga atgagagtgt tacactggat 660
10 gtggcttacg aaggttccgg ctctggcgac tggcgcacga gtggcggtac tgctggcatt 720
ggcctgaaat tctga 735
<212> Type : DNA
<211> Length : 735
      SequenceName : SEQ ID 444
15      SequenceDescription :

Sequence
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<213> OrganismName : Escherichia coli O157:H7
20 <400> PreSequenceString :
atcggtaaac tttatgccgc cattttgtcc gcagccattt gtctgaccgt atccgggtgcg 60
cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgtctcgacg 120
aacgctcccc gtagcgataa tcttaacggg attaacgtga aataccgtta tgaattcacg 180
gacacgctgg ggctggtgac gtcattcagc tatgcaggag acaggaatcg ccagattacc 240
25 cgttacagcg ataccgcgtg gcatgaagat tccgtgcgta accgctgggt cagcgtaatg 300
gcggggccgt ctgtgcgcgt gaatgaatgg ttcagcgcgt atgcgatggc gggagtggct 360
tacagccgtg tgtcgacttt ctccggggat tatctccgcg taactgacaa caaggggaaa 420
acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
30 tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga 600

<212> Type : DNA
<211> Length : 600
      SequenceName : SEQ ID 445
35      SequenceDescription :

Sequence
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<213> OrganismName : Escherichia coli O157:H7
40 <400> PreSequenceString :
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cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgcccgacg 120
agcgctcccc gtagcgataa tcttaacggg attaacgtga aataccgtta tgaatttacg 180
gacacgctgg ggctggtgac gtcattcagc tatgcaggag acaagaatcg ccagcttacc 240
45 cgttacagcg ataccgcgtg gcatgaagat tccgtgcgta accgctgggt cagcgtaatg 300
gcggggccgt ctgtgcgcgt gaatgaatgg ttcagcgcgt atgcgatggc ggggtgtggct 360
tacagccgtg tgtcgacttt ctccggggat tatcttcgcg taactgacaa caaggggaaa 420
acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
50 tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga 600

<212> Type : DNA
<211> Length : 600
      SequenceName : SEQ ID 446
55      SequenceDescription :

Sequence
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<213> OrganismName : Escherichia coli O157:H7
60 <400> PreSequenceString :
atcggtaaac tttatgccgc cattttgtcc gcagccatct gtctggccgt atccggcgcg 60
cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgcccgacg 120
agcgctcccc gtagcgataa tcttaacggg attaacgtga aataccgtta tgaatttacg 180
gacacgctgg ggctggtgac gtcattcagc tatgcaggag acaagaatcg ccagcttacc 240
65 cgttacagcg ataccgcgtg gcatgaagat tccgtgcgta accgctgggt cagcgtaatg 300
gcggggccgt ctgtgcgcgt gaatgaatgg ttcagcgcgt atgcgatggc ggggtgtggct 360
tacagccgtg tgtcgacttt ctccggggat tatcttcgcg taactgacaa caaggggaaa 420

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acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg      480
ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc      540
tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga      600

5  <212> Type : DNA
   <211> Length : 600
       SequenceName : SEQ ID 447
       SequenceDescription :

10  Sequence
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    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
15  atgcgtaaac tttatgccgc cattttgtcc gcagccatct gtctggccgt atccggcgcg      60
    cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgcccggacg      120
    agcgctcccc gtacgcataa tcttaacggg attaacgtga aataccgtta tgaattttacg      180
    gacacgctgg ggctgggtgac gtcattcagc tatgcaggag acaagaatcg ccagcttacc      240
    cgttacagcg ataccgcgtg gcatgaagat tccggttcgt accgctgggt cagcgtaatg      300
    gcgggggcgt ctgtgcgcgt gaatgaatgg ttcagcgctg atgcgatggc ggggtgtggct      360
20  tacagccgtg tgctgacttt ctccggggat tatcttcgcg taactgacaa caaggggaaa      420
    acgcacgatg ggctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg      480
    ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc      540
    tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga      600

25  <212> Type : DNA
    <211> Length : 600
        SequenceName : SEQ ID 448
        SequenceDescription :

30  Sequence
    -----
    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
35  atggtcatga gccagaaaac cctgtttaca aagtctgttc tcgcagtcgc agtggcactt      60
    atctccaccc aggccttggtc ggcaggtctt cagttaaacg aattttcttc ctctggcctg      120
    ggcggggctt attcagggga aggcgcaatt gccgatgatg caggtaacgt cagccgtaac      180
    ccgcatttga tgacctatgt tgaccgccg acattttctg cgggtgcggt ttatattgac      240
    ccggtatgaa atatcagcgg aacgtctcca tctggtcgta gcctgaaagc cgataaacatc      300
    gcgcctacgg catgggttcc gaacatgcac tttgttgcac cgattaacga ccaatttggt      360
40  tggggcgctt ctattacctc taactatggc ctggcaacag agtttaacga tacttatgca      420
    ggcgggctct tcgggggtac aaccgacctt gaaaccatga acctgaactt aagcgggtgcg      480
    tatcgcttaa ataatgcatg gagctttggt cttggtttca acgcccgtct cgctcgcgcg      540
    aaaattgaac gtttcgcagg cgatctgggg cagctgggtt ctggtcagat tatgcaatct      600
    cctgcgggga agactcctca agggcaagca ttggcagcta ccgccaacgg tatcgacagt      660
45  aataccaaaa tcgctcatct gaacggcaac cagtgggctt ttggatggaa cgccgggtatc      720
    ctgtatgaac tggataaaaa taaccgctat gcactgcact accgttctga agtgaaaatt      780
    gacttcaaag gtaactacag cagcgatctt aatcgtgtgt ttaataacta cggtttgcca      840
    attcctaccg ccacaggttg cgcaacgcaa tcgggttatc tgacgctgaa cctgcctgaa      900
    atgtgggaag tgtcgggtta taaccgtggt gatccgcagt gggcgattca ctatagcctg      960
50  gcttacacca gctggagtca gttccagcag ctgaaagcga cctcaaccag tggcgacacg      1020
    ctgttccaga aacatgaagg ctttaaagat gcttaccgca tcgctgtggg taccacttat      1080
    tactacgatg ataactggac cttccgtacc ggtatcgctt ttgatgacag ccaggttccg      1140
    gcacagaatc gttctatctc cattccggac caggaccggt tctggctgag tgcaggtacg      1200
    acttacgcgt ttaataaaga tgcttcagtc gacgttggtg tttcttatat gcacggtcag      1260
55  agcgtgaaaa ttaacgaagg ccataccag ttcgagtcct aaggtaaagc ctggctgttc      1320
    ggtactaact ttaactacgc gttctga      1347
    <212> Type : DNA
    <211> Length : 1347
        SequenceName : SEQ ID 449
        SequenceDescription :

60  Sequence
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    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
65  atggcctttt ctcaagcggg tagcggatta aacgctgccg ccaccaacct cgatgttatt      60
    ggcaacaata tcgcctaact cgccacctac ggctttaaat caggcacggc ctcttttgcc      120

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gatatgtttg ccggttcgaa agtgggactg ggggtaaaag ttgccgggtat cactcaggac 180
tttaccgatg gcacgaccac caacaccggg cgtggtcttg acgttgctat cagccagaac 240
gggtttttcc gtctggtaga tagcaacggg tccgtgttct acagccgtaa cggacaattt 300
aagctgggatg aaaatcgtaa cctggtgaat atgcaagggt tacagctgac gggttaccgg 360
5 gcaaccggta cgccgcccac tattcagcaa ggggcgaatc cgactaacat ttcgatcccg 420
aataccctga tggcagcgaa aactaccacc acggcgctga tgcagatcaa cctgaattcc 480
agcgatccgc ttccctctgt taacgcattt gatgccagca atgcggatag ctataacaaa 540
aaaggttcgg tgaactgttt cgacagtcag ggtaattgctc atgacatgag cgtctacttt 600
gtgaagaccg gggataataa ctggcaggtc tacaccagg atagcagtga tccaacagg 660
10 acagccgagc ctgcaatgaa gctgggtgtt aatgccaatg gcgttctgac ctcaaattcc 720
acagagaata ttaccaccgg cgcaattaac ggcgacagac ccgccacggt tagcctgagc 780
ttcctcaact ccatgcagca aaataccggc gctaacaaca ttgtggcaac caccagaat 840
ggctacaaa cgggcgatct ggtgagttat caaatcaatg atgacggtag ggttgtcggc 900
aactattcca acgaacaaa ccaactgctg gggcagattg tactggcgaa ctttgccaac 960
15 aacgaaggct tggcatccga aggcgacaac gtctggtctg cgacgcaatc ttctggcggtg 1020
gcgctgttgg ggacagccgg gacgggcaac tttggcacc tgaccaacgg tgcgttgga 1080
gcgtccaacg tcgatctcag taaagaactg gtcaatatga tcgttgccca gcgtaactat 1140
cagtctaacg cccagaccat caaaaccag gaccagatcc tcaacacgct ggttaactta 1200
cgctaa 1206
20 <212> Type : DNA
    <211> Length : 1206
        SequenceName : SEQ ID 450
        SequenceDescription :

25 Sequence
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<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
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30 caatcatccg ctgtgggctaa ctgtacaaac acacagatag gtcaaaactga agatgggtcgg 120
acagcgctta ttgagttcgg aaaaattaat atgaccgaca cctattttgc gccagcagg 180
tactcctcgc cgacaacggg cgtacctccc actaactaca catcagggtg gcgacagga 240
agctccgtat tgtgggaatg tgatgcaaca gatttgccaa acatctattt tctggctcgt 300
acaaatggcg acgaccgctg ggggggcttt tacgatgcag gcgggcctga tggctctgag 360
35 gatgtctatg ccacctgggt cgctttttgtc ggtctcaagc agaccatggc gggcgtgacg 420
cttggctcgt actggaagaa agtgcccac accagttatg ccactcaggg aactaaaatc 480
cagattcgct tacaggatat cctcctctct catgctgagc tttatcgcat cagtacgcta 540
cctgatcatc cagcaacaac aggttggtgc ggtaataata atacagatag tagtggagtc 600
ggattcgcaa aaccttcggg tacaatctat aactgtgttc agcccaatgc ctatattcag 660
40 ctttcgggta ccagcggcat tttatttggt catgatgagc ccggcgaaga tagttctggt 720
cattgggatt tctgggggtg tgataatggt tttggttacg gaatgcgttc ggccaatcga 780
ctctacaaca atgcccctg cgttgcccgc agcggcagc cgttagtatt gctgccgaca 840
attgcagaag cacaactgaa tgcgggcatg gaaagtaccg gtaattttaa tgcgcgctc 900
gagtgtagta actcgggtta atcagggatt agcgatactc agacagcatt aggaatccag 960
45 gtgtctgaag gtgcatatac agcggcgcaa aaactgggga ttatcaatag caacggcggc 1020
gtcagcgccc tggctctgta taattatgac gcagcagaga tggcaaaggc cgttggggtc 1080
tacatttcta acagtgtcga ccccgatacg gcgatgacgc tgggttggtca accgggcatc 1140
gcgaagttaa ccccgagg aaatgcagcg ggggtggtatc ctgtatttga aggggcaaca 1200
ttagaagggt cgactcacc cggatactcc agctatagtt actcttttat cgcccggtt 1260
50 aagaaactgc caaatcagac agtcagtgcg ggaaaagtgc gggcaacggc ttatatattg 1320
gtgaaaatgc aatga 1335
<212> Type : DNA
<211> Length : 1335
    SequenceName : SEQ ID 451
    SequenceDescription :

55 Sequence
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<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atggaaaaca atcgcaattt ccctgccaga caatttcatt cgctcacgtt ctttgccgg 60
ctttgtattg gcatcacgcc tgtggctcag gcactcgccg ccgaagggca aactaacgcg 120
gatgacacgc tgggtgtcga agcatcaacg ccttcgcttt atgcgccaca acaatctgcc 180
gatccgaaat tctcgcgctc ggtagcggat actaccgca cgatgacggg gatttctgaa 240
65 caagtgatta aagatcaggg cgcaaccaac cttaccgatg cgctcaaaaa cgtccccggc 300
gtgggtgcgt tttttcggg tgagaacggc aactccacca ctggcgacgc catttatatg 360
cgcggtgctg atacctctaa cagtatttat attgatggca ttcgcgatat cggcagcgtc 420

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5  tgcgcgcgaca ccttcaatac tgagcaggtc gaagtgatta aagggccttc cggcaccgac 480
   tacggggcgca gcgcgcgcgac gggctcgatc aatatgatca gcaagcagcc gcgcaatgat 540
   tccggcattg acgcctccgc cagtattggc agcgccctgg tccgcgcgcg cagcctggac 600
   gtcaatcagg tcatgtgtga taccactgcg gtgcgcctga atgtgatggg cgaaaaaacg 660
   cagcatgcgc gacgcgacaa agtcaaaaaat gagcgcttac ggcgcgcccc ttctatcgct 720
   tttggccttg gtacagcgaa tcgtttgtat cttaattatc tgcatgtcac ccagcacaa 780
   acgccagacg gcggcattcc aaccatcggg ttgcggggct attctgcccc atctgcagga 840
   acggcgaccc tgaatcattc cggaaaagtt gatacgcata acttttacgg caccgattcc 900
   gattacgacg attcgaccac cgacaccgcc accatcgctt ttgagcacga tatcaacgat 960
10 aacaccacca ttcgcaacac taccggttgg acgcgcgtga agcaggatta cctgatgacg 1020
   gcgattatgg gtggggcgct gaattattacc cagcccacca gcgatgtgaa tagctggacg 1080
   tggtcacgca cggcgcaata caaagatgtg agtaataaaa ttctcaccaa ccagaccaac 1140
   ctgacctcga cattctatac cgcttctatc ggtcatgatg tcagtaccgg cgtggaattt 1200
   acccgtagaa cgcagcgtaa ctacggcggt aatccgggtg cgttacctgc ggtaaatatt 1260
15 tatcatcctg acagcagcat tcatcccggc ggcttgacgc gcaacggcgc aaacgccaat 1320
   ggtcagacgg ataccttcgc aatttacgca ttcgatacgc tgcaaatcac cctgatttt 1380
   gagctgaacg gcgggatccg tctggataat tatcatactg aatatgacag tgcaccgcc 1440
   tgccggcgga cgggacgcgg tgccatcacc tgcgcagctg gtgtggcaaa aggttctccg 1500
   gtcaccaccg tcgacaccgc caagtccggc aatctgggtg actggaaagc cggggcgctg 1560
20 tatcacctga cggaaaaacg caatgtctat attaactatg cgttttccca gcagcctccg 1620
   ggcggcaaca acttcgcctc tgcgcagctc ggcagcggta acagtgccaa ccgcaccgat 1680
   tttaaaacgc aaaaagacaa caccagcgag atgtccacca aatggcaggt tctggataaa 1740
   cgcctgttgc tcaccgccgc gctgttccgt actgatctcg aaaatgaagt tgagcaaaat 1800
   gatgacggga cttactcgca atacggtaag aaacgcgctc aaggctatga gatatccgtg 1860
25 gcagggaata tcactccgcg gtggcaggtg attggcggct ataccagca aaaagcaacc 1920
   gtcaaaaacg gcaaaagtgt tgccaggatg ggttccctat cgctgcgcta taccccggag 1980
   cacgccttca ccttatggag ccaatatcag gcaaccgatg atatctctgt tggcgcgggc 2040
   gcacgctata tcggcagtat gcataaaggt tcagacggcg cgggtgggaac gccagcgttt 2100
   accgaaggtt actgggtcgc cgatgcacaa ctgggggtata ggggttaatc caatctcgac 2160
30 ttcagctaaa acgtctacaa cctgtttgat accgattacg tcgcctcaat caataagagc 2220
   ggctaccggt atcaccggcg cgagccaaga accttcttgc tcacagccaa tatgcatttc 2280
   tga

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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2283

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35  SequenceName : SEQ ID 452
     SequenceDescription :

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## Sequence

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40  <213> OrganismName : Escherichia coli O157:H7
     <400> PreSequenceString :
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   ttgagccagg ccgagaacct gatgcaagtt tatcagcaag cagccttag taaccggaa 120
   ttgcgtaagt ctgccgccga tcgtgatgtc gcctttgaaa aaattaatga agcgcgcagt 180
45  ccattactgc cacagctagg tttaggtgca gattacacct atagcaacgg ctaccgcgac 240
   gcgaacggca tcaactctaa cgcgaccagt gcttccctgc agttaaactca atccattttt 300
   gatattgtcg aatggcgtgc gttaacgctg caggaaaaag cagcagggat tcaggacgtc 360
   acgtatcaga ccgatcagca aaccttgatc ctcaacaccc cgaccgctta tttcaacgtg 420
   ttgaatgcta ttgacgttct ttctataca caggcgcaaa aagaagcgat ctaccgtcaa 480
50  ttagatcaaa ccacccaacg ttttaacgtg ggcttggtag cgatcaccca cgtgcagaac 540
   gcccgcgccg agtacgatac cgtgctggcg aacgaagtga ccgcacgtaa taaccttgat 600
   aacgcggtag agcagctgcg ccagatcacc ggtaactact atccggaact ggcggcgctg 660
   aatgtcgaaa actttaaaac cgacaaacca cagccgggta acgcgctgct gaaagaagcc 720
   gaaaaacgca acctgtcgct gttacaggca cgcttgagcc aggaacctggc gcgcgagcaa 780
55  attcgccagg cgcaggatgg tcacttaccg actctggatt taacggcttc tagcgggatt 840
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   agcaatatgg gccagaacaa agttggcctg tacaactttg ttggtgccag cgagcaactg 1020
   atgggttaac cgcaggtgaa acaggcacag gtacgttcc ttttcaacaa cattaatgct 1080
60  tctatcagta gtattaaacg ctacaaacaa gccgtagttt ccgctcaaaag ctcatagac 1140
   gcgatggaag cgggctactc ggtcggtagc cgtaccattg ttgatgtgtt ggatgcgacc 1200
   accacgctgt acaacgcgca gcaagagctg gcgaatgcgc gttataacta cctgattaat 1260
   cagctgaata ttaagtcagc cctgggtacg ttgaacgagc aggatctgct ggcactgaac 1320
   aatgcgctga gcaaacgggt ttccactaat ccggaacacg ttgccccgca aacgcgggaa 1380
65  cagaatgcta ttgctgatgg ttatgcgcct gatagccgg caccgcgtct tcagcaaaac 1440
   tccgcacgca ctaccaccag taacgggtcat aaccctttcc gtaactga 1488

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&lt;212&gt; Type : DNA

<211> Length : 1488  
SequenceName : SEQ ID 453  
SequenceDescription :

## 5 Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

gtgaccaa	aac tcaaac	ttctt ggcact	tgtga gtgctt	atcgc caacgt	ctctg aggcgt	tagcg 60
cacgctga	ag gtaaat	ttttc cctggg	cgcga ggcgt	aggtg tcgttg	aaaca cccata	taaaa 120
gattacga	tata ccgatg	tttta ccagta	ccg gtaat	caact atgaag	gcga taactt	ctctg 180
ttccgtgg	ct taggtg	gtgtg ttacta	ctctg tggaat	gcagc caacgg	ataa actttc	caatt 240
accgctta	ct ggtcgc	cgctt ttactt	caaaa gctaa	agaca gtggcg	atca ccaa	atgcgt 300
cacctggat	g accgt	aagag cacaat	gatg gctgg	tctgt cttatg	ctctc etttac	ccag 360
tacggttac	c tgcgt	taccac cctggg	ctggc gatacc	cttg ataac	agcaa cggcat	cgctc 420
tgggatatt	gg cctgg	ttgtg tcgtta	cacc aacgg	tggcc tgacc	gtgac tccgg	gtatt 480
gggtgtcag	t ggaac	agcga aaacc	agaac gaata	ctatt atggc	gtatc gcgcaa	agag 540
ttcgtctcg	ca ggggt	ctctg tggct	tataa tcgaac	gcaga gctgg	agccc ttacct	ggag 600
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cgtctgtct	g atgaag	ttac tgacag	cccc attgt	ggata aatcct	ggac tggcct	gatt 720
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 747

SequenceName : SEQ ID 454

25 SequenceDescription :

## Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

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aacgcagct	g aaaa	gcacaa accgc	agtat ctttcg	act ggtggc	acca gagcgt	taac 120
gttgtcgga	g ctatc	acac ccgttt	cgga ccgcag	atcc gcaacg	atac ctacct	tgag 180
tacgaagcat	tcgcta	aaaaa agactg	gtttc gacttt	ctatg gttatg	cgga tgcgcg	ggta 240
ttcttcggc	g taact	ccga tgcaaa	aggt atctgg	aacc acggtt	ctccc tctgtt	tatg 300
gaaatcgaac	cacgttt	ctc catcg	acaag ctgacca	ataa ctgacct	tag cttcgg	tccg 360
ttcaaagagt	ggctact	tcgc gaacaa	ctac atttac	gcaca tgggtc	gtaa taaag	atgggt 420
cgccagagca	ctgggt	acat ggggt	tctggg accgat	atcc acactg	ggcct gccgat	gagc 480
ctgtccatga	acgtct	atgc gaaata	accag tggcaga	act atggc	gcagc gaacga	aaaac 540
gagtgggacg	gttacc	gttt caaaa	attaaa tacttt	gtgc cgattac	cca tctgtg	ggggc 600
ggtcagctga	gctacac	tcgg ettcacca	ac ttcgact	ggg gttccg	attt agggg	atgac 660
agcggtaacg	caatcaa	cggt tatta	agacc cgtact	aaata actct	atcgc ttccag	cgcatt 720
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gggtgtcagt	ggaacg	acga tgcaga	actg aacttc	cgga acggca	actt caacgt	ttcgc 840
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 885

SequenceName : SEQ ID 455

50 SequenceDescription :

## Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

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gaagaaacgg	tgattg	ttga gggtt	cagcc acagct	ccag atgat	ggcga aaatg	attac 180	
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gtgatggaaa	acacgct	ggg gatc	agcaaaa agtcag	ggcg attccg	atcg tgcctt	ttat 360	
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gcgtacaacg ataaagagat caacaaggtc tttatgaccc tgaagcagcg gtttgctgat 960
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5 tatgtcgatg cctatgtaaa caaagcggat ggtatgctgg ttggggcata cagtaattat 1080
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ttcgacaaaa cctacgatac caacgtggaa ggttctatcg tctacggcgc accgcgtaat 2160
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25 <212> Type : DNA
    <211> Length : 2190
        SequenceName : SEQ ID 456
        SequenceDescription :

30 Sequence
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<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
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35 atggtgatgg gagaagctgc aattgctgca ccgctgccac aatgggcgaa tgccccagcg 120
gttaacgccag ttgcccattt atctttacag gaaagtatat tacgcgcctt tgccgcgaat 180
cccgggtgtca ctcaacaggc ggccgagata ggtattggcg aagcgcaaat tgatgaagcc 240
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40 tatgactttg gtaaaaactaa caacgatatc aatctgcaaa ctgccgcccg tgacagctac 420
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45 atggcgagcg ccaaagcgca actggcggtg ctactggcg tacagccgga ggcgatagcc 720
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<211> Length : 1356
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    SequenceDescription :

60 Sequence
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<213> OrganismName : Escherichia coli O157:H7
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gttagcgatc aggttcttga aaatcagaat gcaacgacgc tggatgaagc gctttataac 300
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10 gaagattact ggcgaaaactt cggtaaagag gcaggtacat ttattgcccc gtcactcacc 720
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30 cataacatgc caggcaataa cactactgac tttggcggtg gtggacattg cgtaagccgt 1920
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gccgcataca aaatgaaatt gcagtatccg gtcacactgc aattaaacgt caaaaacctg 2040
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35 <212> Type : DNA
<211> Length : 2142
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SequenceDescription :

40 Sequence
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<213> OrganismName : Escherichia coli O157:H7
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45 caagaggcaa cggtgaaaga ggtgcatgac gcgccagcgg tgcgtggcag tattatcgcc 120
aatatgctgc aggagcatga caatccgttc acgctctatc cttatgacac caactacctc 180
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50 tccaatagcg aagagtcttc accgtttcgt gaaaccaact acgaaccgca attgttcttc 420
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55 tatcacctcg gtgatgcggt gctcagtgcg aaaggacagt acaactggaa caccggctac 720
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60 <211> Length : 870
SequenceName : SEQ ID 459
SequenceDescription :

65 Sequence
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<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
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ttagttcggg tgatgagtgc gccgcagctg tacgttgggtc aggaggcacg ctttgggtggc 180  
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gtgaacgggtt ttctggaccc ggtggatttc cgtggacaac tggttacggt agtcgggcca 360  
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gcaacaggtt acaaacgttg gcatttaacc cagcaggtga ttatgccgc tcagccgatt 480  
gatccctggt tttatggcgg tcgtgggtgg ccctatggcc acggcggtat gggctggat 540  
10 aatcccggcc ccgcgagagt acaaacagtt gtaactgaat aa 582

<212> Type : DNA

<211> Length : 582

SequenceName : SEQ ID 460

SequenceDescription :

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Sequence

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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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gttgaaatta gcggggcgga cccgcgtttc gaaccactga acgcgacggc aaatcaggat 180  
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<212> Type : DNA

40 <211> Length : 1089

SequenceName : SEQ ID 461

SequenceDescription :

Sequence

45

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<213> OrganismName : Escherichia coli O157:H7

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agctatggaa ccatcgtaa cgtacgtccg gtacagattc agggcggtga tgattccaac 180  
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ggcgtagaca gtgcaatgaa caaacgcaa ggtgtcgagc tggaaattcg taaagacgat 360  
ggtaatacca tcatggtggt acagaaacaa ggcaacactc gtttctctcc gggccaacgt 420  
55 gtcgtactgg ccagcaatgg cagtcagggt accgtttctc cgcgctaa 468

<212> Type : DNA

<211> Length : 468

SequenceName : SEQ ID 462

SequenceDescription :

60

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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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tcagctggag gcggcggtgg ttcgtccatc gacgctgtca tgggtgatc aggtgcggta 180

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gttgagcagt acaaacgcat gcaaagccag gaatcaagcg cgaagcggtc tgatgagcag 240
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20 SequenceName : SEQ ID 463
SequenceDescription :

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accaaacaag aaactaaaac cgттаататт аттссаттс тсссгсгаа агтгсггта 180
30 gacaaactccc aaaataaaac gaacgcacaa gccttcggcg cgcttattgg cgcagtcgct 240
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<212> Type : DNA
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SequenceName : SEQ ID 464
SequenceDescription :

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40 <213> OrganismName : Escherichia coli O157:H7
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3714

SequenceName : SEQ ID 479

SequenceDescription :

65

Sequence

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   aacacttact ataaagctgg tggcgctgaa gtgaaatact tccgccctta tagcgtgtat      1560
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      <211> Length : 1563
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      SequenceDescription :

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<212> Type : DNA
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SequenceName : SEQ ID 484  
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30 <211> Length : 2526
SequenceName : SEQ ID 486
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5 <212> Type : DNA
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   aaaagacaca ccaccacaaa aaacacttac gcaacttaca attatttacc cacagacacg 180
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   tcattctttat cccctgttag agtgttgtat atgtataatg gtcaattaac tatagaaaac 300
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   ctcaataaca ttaaaacaaa tcttataatg aaatataagta atgaaaatcc aaacaatttc 600
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60 gataaatcgt atttcatgac cggcaatggt tttggcgtgg tgttgggggg gaaattttgtg 240
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   acccttgggt tgaattccc tgctattcct cggaatcgt tgatggcttg 600
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<211> Length : 1932  
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   tttaaaccgg gtgaaaacgg gcctgtgcct aaaaacttcc ccgcccttta ttctgacagg 1380
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<212> Type : DNA
45 <211> Length : 1416
      SequenceName : SEQ ID 492
      SequenceDescription :

50 Sequence
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<212> Type : DNA
25 <211> Length : 2256
      SequenceName : SEQ ID 493
      SequenceDescription :

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<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
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45 caaacctatt gcagcactca aaaccaatgc accgccacta atgaagctaa atctatcgct 780
caaaacgccc aaacatctt ccaggcttta ccagacagc ggatttttagg gggcttagcc 840
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<212> Type : DNA  
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SequenceName : SEQ ID 494  
5 SequenceDescription :

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<213> OrganismName : Helicobacter pylori, strain J99  
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aatcaagtgg cttcgttgaa gcaaagcatt caaaacgcca acaacattga gctgggtcaat 240  
15 agctcttttaa actattttaa aagctttacc aacaacaact acaacagcac caccaatcg 300  
cccattcttta acgccgtgca agccgttatc acttcggtat tgggtttttg gagtctttat 360  
gcggggaact atctcacttt ttttgtgggt aataaggata ctcaaaaacc cgctagtgtc 420  
cagggtgaacc ctccctttttc aactattgtt caaaactgct caggaattga aaactgcgcg 480  
atgaatcaaa ccacttatga taagatgaaa aagctcgtcg aagatctcca agcagcccaa 540  
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30 agcgtggcta aagatgttta taatttaaaa tccaatcaaa cagaaatcgt aaccacctat 1200  
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<212> Type : DNA  
45 <211> Length : 1956  
SequenceName : SEQ ID 495  
SequenceDescription :

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<213> OrganismName : Helicobacter pylori, strain J99  
<400> PreSequenceString :  
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55 ctattacaag gcacacaaac ccaagaacaa accatagcca ccaactcaaga aaaacccaaa 180  
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65 aaccaagcaa attgtgtggc taaagtggcg cctttcacct ctcaagacgc taaaaatttg 780  
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<212> Type : DNA
25 <211> Length : 2235
      SequenceName : SEQ ID 496
      SequenceDescription :

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30 <213> OrganismName : Helicobacter pylori, strain J99
    <400> PreSequenceString :
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35 aaaagacaca ccaccacaaa aaacacttac gcaacttaca attatttacc cacagacacg 180
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gaagccttta cccacaaaac cgcagaagaa ttcactaatt taatgttgaa catgatcgct 660
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atccaaagaa aagctagcgt cgtttctagc ggtggcgatt atacgaactc ttttgttttc 1920
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<212> Type : DNA

<211> Length : 1974  
SequenceName : SEQ ID 497  
SequenceDescription :

## 5 Sequence

<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

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aatggtgtct	cattttatgg	ttgctctgat	tatgtaaata	aaggcgactg	taaggcgctt	180
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ttttacttta	tcgatcttgc	aaaacaaaa	gaacgaaaa	aagatttaga	aaaagaaaa	360
aaagaattgc	ttaataagat	tgaaaagcaa	aaaatcaaac	accttgagcg	tttcattttg	420
gctggtgtaa	aagctaatat	taaagaaaat	tcttttttct	taggatgtaa	aaattatcct	480
aatggcgaat	ggactgctag	tatggattca	caagatctta	aatgtcccaa	atgcaacaga	540
ttaatgaaaa	gaaaaaagaa	tttcaaaaac	aatgagtttt	ttacagctac	atcgcttacc	600
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<212> Type : DNA

<211> Length : 660

SequenceName : SEQ ID 498

SequenceDescription :

## 25 Sequence

<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

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actaagtttg	gctttaacaa	ccaaagatac	cagccttcta	aagacattta	tcctacaggt	180
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aataagtata	atattagaat	ggatttgaaa	ctagaatatt	atggcaatat	cacaaaaaaa	1260
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<212> Type : DNA

55 <211> Length : 1398

SequenceName : SEQ ID 499

SequenceDescription :

## 60 Sequence

<213> OrganismName : Helicobacter pylori, strain J99

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aaaaacaccg	gcgaattgaa	aaacttgaa	gacaaatacg	agcagttta	ccaatcttta	180
gccccactgg	cttcgtttaa	aaaaagcatt	caaacggcga	acaacattca	ggctgtcaac	240
aatgctttta	gcgattttaa	aagctttg	agtaacaacc	acacaaacaa	agaaacatcg	300

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ccccctctaca acaccgcgcga agctgtttatc acttcagtat tggcttttttg gagtctttat 360
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ggaagaatcc atagagatgg gaactgcaca ggattacaac aatgttttat gagcaaaaga 480
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5 gcttatccag aatgctctag caatcaatca aatggaggca aaacttccat gactacagct 600
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15 ctaaaatcca atcaaacaga gatcgtaacc acttataacg atgctaagaa tttgagcgaa 1200
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gttgaaactg gcattaaaat ccctaccatt aacaccaatt attattcttt tctaggcact 1860
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<212> Type : DNA

30 <211> Length : 1917

SequenceName : SEQ ID 500

SequenceDescription :

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<213> OrganismName : Helicobacter pylori, strain J99

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40 ttctccaaag tgggtttttaa ccgttcgcct attaaccttg ttaaaggatc ctatcctaca 180
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45 gaccctaggg gtattggcta tatgtatag ggtgagtgga acggcttgtt ccctaattac 480
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caaggccctc aaaacatggg tggatcgca aaaagcatta ctcaagacag aagccatttg 1560
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65 <212> Type : DNA

<211> Length : 1587

SequenceName : SEQ ID 501

## SequenceDescription :

## Sequence

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5  <213> OrganismName : Helicobacter pylori, strain J99
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      ggcacggctt taggctcggc gtatgtcgcgt ggggctaggg gtgctgacgc ttctttttac      180
10  aaccgcgcta acatgggctt tactaacgat tggggcgaaa acagaagcga atttgaaatg      240
      accaccaccg tgatcaatat cccggccttt agctttaaag tccctacgac caatcaaggc      300
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      aacactatag ggttaggcaa tatccttaaa gcgcttgcca atacggccgc taccaatggc      420
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15  accctcgctt caaaacctga cactcaaatc gtgaatggct ggacaggcac gactaatattt      540
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25  agagtgggtt cgagtttgcg tgtgtttgat catggcatgt tttctgtggg gtataattct      1140
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30  aagggcttga gcgggacggg ggcttcttg gactctgaaa cgcttaaaaa aatggtaggc      1440
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      agattagggg taacttacat gggtaaaagc ttgcgtttaa tgggcgctat tgattatgat      1560
      caagcccaa gcccacaaga cgcgataggc attccggact ctaatggcta taccgtggc      1620
      tttgggacta aatacaattt taggggcttt gatttggcg tagcggggag tttcactttt      1680
35  aagagcaacc gctccagttt gtatcaatcc ccaactattg ggcaattgag aatcttttag      1740
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40  SequenceDescription :

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## Sequence

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45  <213> OrganismName : Helicobacter pylori, strain J99
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      actcaaaacg cacttaaaac ttcatggag cgattgagtt cagggtttaag gatcaataaa      120
      gcggctgatg acgcacagg catgacgggt gcgattctt tgcgttcgca agcagagcagt      180
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ttaggttctg tgcaaaatca aatgattagc actgtgaata acatcagcat cactcaagtg 1380  
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 SequenceDescription :  
 10 Sequence  
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40 <213> OrganismName : Helicobacter pylori, strain J99  
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Sequence
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SequenceName : SEQ ID 506
SequenceDescription :

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Sequence
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20 SequenceName : SEQ ID 508  
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SequenceName : SEQ ID 530

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	ccttcgtcgg	gcttcttcaa	ttccgggtgc	ggcgccaaact	ccgggttcgg	caacaacggc	2940
25	tcgggctct	cgggttggtt	caacaccaac	ccggccgggc	tggtggggcg	ctcgggctat	3000
	cagaacttgc	cgggcttacc	ctcgggcttt	ttcaaccttc	gcagcggcgt	ctcaggcttc	3060
	gccaacaggg	gcacctcgcc	gttctcggta	gccagcgtcg	tttcgggctt	tgccaatatc	3120
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<212> Type : DNA  
 30 <211> Length : 3162  
 SequenceName : SEQ ID 535  
 SequenceDescription :

Sequence  
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 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
 <400> PreSequenceString :  
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 40 gccgcggcgg ccgacagagt gtcccacgcag atcgccggtc tattcggagc gcatgccagg 180  
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 55 ggtaacgcgg aggccttcgg cggcgccggc ggcaacggcg gcaaagggtg ctttgcctcag 1080  
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<212> Type : DNA

<211> Length : 1848

SequenceName : SEQ ID 536

SequenceDescription :

Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

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	gctgctgtct	ctttcggctc	ggtagacagc	gggctggtcg	gcgggtcgtg	gcagggtcgg	180
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	cggctggcga	tggtacaacc	ggcgtcgggt	gccgcccaac	gttcgggcct	catatcgctg	360
	gtgatataca	accttttttg	tcaaaacgct	cccgcgatcg	cgggccgcga	agccgcatac	420
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	accttcaaca	cgggcggcgc	caacaccggc	tggttcaaca	cagggaagcat	caacaccggc	1260
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	aacacaagtc	ctgttgggct	gctagccggc	tcgggctacc	agaactacgg	tggtcttacc	2820
	tccggtttct	ccaaccttgg	cagcggcgata	tcgggcttgc	ccaacaccgg	cacctgccc	2880
	tttgccgtga	ccagcttggg	ctccgggttg	gccaacatcg	gcaacaacct	gtcgggcctg	2940
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<212> Type : DNA

<211> Length : 2964

SequenceName : SEQ ID 537

SequenceDescription :

Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

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  gcgtatcagg cggtagcgcc ccaaatgtcg gcgtttcacg cccagttcat gcaggcgttg 240
  acgggtgccg gcggggctta tgcggctgcg gaggcggtca acgtctcggc ggccgagagc 300
  gtggaacaag acctgttgcc cgcgatcaac gctcgcctcg agcggatatt tgggcgcccc 360
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10 tacggcaacg gtggcaacgg cggcaccagc acgaccgtgg gcatggcccg cggcaacggc 480
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  ggccggcaac gcggcgcccg cgggtggcta ttccgcaacg gcggcgcccg cgtgcccggc 600
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  gtccggcgac cgcggcggtt gtggggcgcc gcggggcgcg tggtgccggc 720
15 gtggctggcg ccggcggttt cgaggggacg atcggtgccg gcggtgcccg cgggtgtcggc 780
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  gtatttagcc tattcggatc cgtggcgggc cccggcgcca acggcgcggt cggcgcggtc 1260
  ggccgtgtcg gcgggtgtgg cgggcgtgcc ggcttgttcg gcgtcggggg cctcggcggg 1320
25 gcgggtggcg acgcgggtga ctccggcgaa ggccggttcg gcgggcgggg gctcgcgggc 1380
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  ggcaatgggt gtgccggcgg ctccgggtggc gacggcgcg cgcgcggccg tggcggtgcc 1560
  ggcaacttgg gctcggcccg ggttatcaac gcccccgcc gtaaccccgg cagcgggtcg 1620
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  ctgttgggca ctggtggcgc cgttggagtc ggccggcgcg gcggggcccg cggcgacgga 1860
  ggccgcggcg gcggcaatgg cggcgggcgc agcggcgccg gcgggtgggt gttggggacc 1920
35 ggcggggcgg gcggcaatgg cggcgggcgc agcggcgccg gcgggtgggt gttggggacc 1980
  ggtggtgccg gtggtgccgg tggtaacggc ggcaatggcg gaaaagcccg ttttagccct 2040
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  gccaccggac cctggctgtt cggcgacggc ggcgccacc caggcagcac cgtgtccgg 2160
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40 ggccggcacc ggtgcccga cgggtcaggt ggtgccggcg gcctcagcgg gctgctgttc 2280
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<212> Type : DNA

<211> Length : 2304

SequenceName : SEQ ID 538

45 SequenceDescription :

Sequence

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50 <213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

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55 acctccggcg gcaacctgta tgcggccgcc gagagccaca ccgtcgagca gatggtgttc 300
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  aacgggacgg cggagaaccc ggacggccaa aacggcgggc tggctgttcg caacggcgcc 420
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  ggggcggcgg gagccggcgg tgacggcgcg tggttgttcg gcgacggcgg ggccggcgcc 720
  accggcggga acggcggcag cggctttaac agcttgacct cttcgggtcg cggcgccggc 780
  ggggcgggtg ggcacgcccg gctgttcggc gccggcggga ccggcgggac cggcgccgg 840
65 ggccgggcaa acaccgagac cggcccgggc gccagcaacg gcggcgcggg cggcgccgg 900
  gcggcgggcg ggtacctggt cggcgatggg ggcggcgcg ggaccggcg ggcggcggg 960
  aagaattcca gcgggtggcg caacctcacc gggggcaccg gaggggacgg cggggcgggc 1020
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5  gggggcgccg ggtggctcta cggcagcggc ggcgcggcg gtgcggcgcg cgccggcggg 1080
   ctcaacaacg ccggtgggtc caccggcggc accggcggtg ccggcgaggc cggcggtctt 1140
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   accagcgccg gcaccggtgg tgtcggggct agcggcgggg ccggcgggaa cgccgggctg 1260
10 atcggcgccg gcggccacgg cggggccggc ggcgcggcg gaaaccaaac cggctggcgtg 1320
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   aacggcgggg acggcgcaa cggcgggggc ggcggggcca acatcgccgg cggcaatggc 1440
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15 atcgccggcg ccggcgggg cggcggaac gccgggaatg gcggcttgct aagcggaac 1620
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   ggtgcggcg cggtcggcg caacgccag ctcacggga acggcgggca cggcggtggc 2160
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<212> Type : DNA

<211> Length : 2196

SequenceName : SEQ ID 539

SequenceDescription :

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Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

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   acgaacttcg gtaacggaac caacggcaac ttcaactttg gtagcggcaa taccggcagt 180
   aacaacatcg gcttcggaaa caccggcagc ggaatttcg gtttcggaaa caccggcaac 240
   aacaacatcg gtagcgggct caccggcgat ggtcagatcg gtagcggcg actgaactcg 300
35 ggcagcggaa acatcggttt cgggaactcc ggcaccggaa acgctcggttt gttcaactcc 360
   ggcaccggca acgtaggctt cgggaactcc ggtactgcca aactggatt cgggaacggc 420
   ggcaacgtca acaccgatt ttggaacggc ggcagcaca aactggcct cgttaacgcc 480
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   ggaaacataa actcagattt tgggaattcg ggtgacggca acagtggttt cctcaatgct 600
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45 acgggctacg gttccacagg tttctataac cggcgctca acaacaccgg gatttttctg 960
   accggcggtg tgagttcggg atttttcaat ttggggacgg gcaactcggg cctgctggtc 1020
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<212> Type : DNA

<211> Length : 1065

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SequenceName : SEQ ID 540

SequenceDescription :

Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

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   gccgcggccc aggatgaggt gtcggcgcg atcgcgcggt tgttttcgca ccacggcgcg 180
60 gcctatcagg tggcagtg gcaggcgcg gcggttcacg ccaggttcgt ggaggcggtt 240
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    gggggcaaa gcggcaacgg cggtaacggc gccaaacggc ttgcacccgg cggcaccggc 1980
    gccagtggcg gagcgggcg gaacgctggg gctggcgga agggcgggga aaacatcat 2040
    ggcgatggcg gcggcggaac cggcgggggc ggcggcaagg gcggcgccgg caccctgcta 2100
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    <211> Length : 2226
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    SequenceDescription :

Sequence
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35  <213> OrganismName : Mycobacterium tuberculosis H37Rv
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    tacggcaacg gcggcaacgg cttctcccaa acgacggcg ggggtggccg cggcgccgg 480
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    gtcattgcca acggtcctt tgccccgtcg ttgctcggt tcggcgggca cggcgggca 1560
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65  <211> Length : 1632
    SequenceName : SEQ ID 546
    SequenceDescription :

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## Sequence

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5 <400> PreSequenceString :
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gcctatcaga cactcggcac gcaggcggcc gcgtttcatg aacggtttat ccaggccttg 240
10 agcacggctg cgggcgcata tggtagcgcc gaggcgcgaa atgcctcccc gctgcagcaa 300
gcgttgaatg tgatcaacgc gccacgcag acgtgctcg ggccccctt gatcggcaac 360
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15 ggcggaacg gggggtgggt atacggcaat ggcggggcgg gcgggctcgg ggggaccggg 600
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<212> Type : DNA
<211> Length : 1821
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40 SequenceDescription :

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## Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv
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50 acgagcacgg caggcgcgta tgccagcgcc gaggcgcgca acgtcgagca gcagctgctg 300
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aacggctctt gcggtgctgg cggagcggcg ggggtccggc gtctgattgg ccacggcggg 1260
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gcccggcgggg cccggtggcaa cggcgggacaa ctctacggca cccggcggcac cggcggcacc 1380
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5 gcccgcgtcc taatcggcaa cggcgggggg ggcggcgccg gcggaaacgg tggggccggc 1620
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<212> Type : DNA
10 <211> Length : 1731
    SequenceName : SEQ ID 548
    SequenceDescription :

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15 <213> OrganismName : Mycobacterium tuberculosis H37Rv
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20 ttactgcctg cgggcgctga cgacgtgtcg gctgcgattg cggcgctgtt cgcaacgcac 180
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caaatcgtgg gccaaaccgc cctcgatgcc atcaattcac ccgtgcagac gctgaccggg 360
cgtccgctta tccgcaacgg tgccaacggg gtcgcaggaa cggggcaaaa cggtggcgat 420
25 ggccgatggc tatacggcaa cggtggcaac ggcgggtccg gcgggacggg ccaaaatggc 480
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40 gcggcgagcc tcagcattca atttgggtga tcagggggtg acggcgccca aggtgggggtg 1380
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45 ggccggggcg gcggcgctcg cgggtcgggc aacgacggcg gcaacggcg cgatggtggc 1680
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aacggcgccc tgcgtgatcg taccggtggc gacggcgagg atggtgtccc accgcaccc 1860
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50 <212> Type : DNA
    <211> Length : 1920
        SequenceName : SEQ ID 549
        SequenceDescription :

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15 <213> OrganismName : Mycobacterium tuberculosis H37Rv
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65 ccgatcaacg cgcaattcgt ggcggccacc gggcgcccgc tgatcggcaa cggcgccaac 360
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 gccgcggcgg gggcgggcg gggccccggg ctgatcgga acggcggaac cggcggaac 960  
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 35 <211> Length : 2406  
 SequenceName : SEQ ID 550  
 SequenceDescription :  
  
 Sequence  
 40 -----  
 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
 <400> PreSequenceString :  
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 45 ctgctgaacg cgttgaacgc gccacccag acgctgctgg ggcgtccgct ggtcggcgac 180  
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 gatgcaggta ccggcgtct cagcgacggg ttgcggggg tggcgggcag cggtgccgg 720  
 55 ggccggcgag cgggctgat tgggtgctgc ggccggcg cgggcaacgg cggcgacca 780  
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 gcccgcgcc aaggggggg ccgcatgaac accacctgc ccggcgggcc gggcggtgtc 1140  
 ggccggcgag gcggcaacgc catcttgttc ggcgacggg gcgcgggtg ggtggcgcc 1200  
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 65 <212> Type : DNA  
 <211> Length : 1305  
 SequenceName : SEQ ID 551

## SequenceDescription :

## Sequence

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5 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
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10 ccggcgctcg cggcgatggc cgcgcggcg gcgcgctatg cgggcttttt gaccacagcc 240  
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15 caggccgcgc cgcagttgcc gttgccggcc ggcttgcaac agttcctcaa caccctgccc 540  
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aacatcggca acggaacaa aggcagctcc aacctcgccg gcggcaacat cggcaataac 660  
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SequenceDescription :

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SequenceDescription :

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30 caggatatata ccgtgggagg aagcatgatg tactcatctg tcgcttcagg atcagccatg 1380  
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<212> Type : DNA

<211> Length : 1455

35 SequenceName : SEQ ID 560  
SequenceDescription :

## Sequence

40 -----  
<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
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gtttatgtaa accttgcgcc tgcgtgaat gtggggcaaa acctggctcg agatctttcg 180  
45 acgcaaatct tttgccataa cgattatccg gaaaccatta cagactatgt cactatgcaa 240  
cgaggctcgg cttacggcgg cgtgttatct aatttttccg ggaccgtaaa ataatagtgcc 300  
agtagctatc catcttcgac caccagcgaa acgcccgggg ttgtttataa ttcgagaacg 360  
gataagccgt ggccgggtggc gctttatttg acgctgtga gcagtgcggg cgggggtggc 420  
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50 gatgatcttc agtttgtgtg gaatatctac gccataatg atgtgggtgg gccactggc 540  
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ccaattcctc ttaccgttta ttgtgcgaaa agccaaaacc tgggggtatta cctctccggc 660  
acaaccgcag atgcgggcaa ctcgattttc accaataccg cgtcgttttc accagcgag 720  
ggcgtcggcg tacagttgac gcgcaacggc acgattatc cagcgaataa cacggtatcg 780  
55 ttaggagcag taggaacttc ggcggtaagt ctgggattaa cggcaaatca cgcacgtacc 840  
ggagggcagg tgactgcagg gaatgtgcaa tcgattattg gcgtgacttt tgtttatcaa 900  
taa 903

<212> Type : DNA

<211> Length : 903

60 SequenceName : SEQ ID 561  
SequenceDescription :

## Sequence

65 -----  
<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
atgggcatca aacaacacaa tgggaataacc aaagccgatc gtctcgtgta attaaaaatc 60



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35  ggaagcctgg actcctttgc cagtggcaaa ctgagcggct ttgacatggg ttacagcggt 2160
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   agtgacagtg ataacaaca gcacacattc tatctogaag cggat<tacac gcagggtaac 2820
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2868

50 SequenceName : SEQ ID 562  
SequenceDescription :

Sequence

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55 <213> OrganismName : Shigella flexneri 2a str. 24 57T
   <400> PreSequenceString :
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   acggcaacaa tcgctgcggg taacaacggg actgcacggt tttacggcac cattgaagac 120
   tcagttgtgt ctatcgttcc ggacgatcac aaactgggag ttgat atggg tgatatcggt 180
60  gccgaaaaac tgaaaaataa cggcaccacc acgccgaaaa gtttc agat tcgtctgcaa 240
   gattgcgtat ttgatactca ggaaacaatg accactacct ttact ggtac cgtttcttct 300
   gcaaatagcg gcaattatta caccattttc aataccgata ccggg<ggcggc atttaacaat 360
   gttatcgtgg cgtacgggta cctctgggt acctcttaca aaagcggcat gggatttgac 420
   cagaaaatag tgaaagacac ttctaccaac aaaggcaag cgaagcagac actgaacttt 480
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   acctccaga ttacttacct gtaa
   <212> Type : DNA

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<211> Length : 564  
SequenceName : SEQ ID 563  
SequenceDescription :

5 Sequence

<213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

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gctctggccg	atactacgac	ggtaaatggg	gggaccattc	acttttaaagg	ggaagtgtgt	120
aacgcccgtt	gcgcagttga	tgcaggctct	gttgatcaaa	ccgttcagtt	gggacagggt	180
cgtaccgcta	gcctgaagca	ggctggagca	accagctctg	ccgttggttt	taacattcag	240
ctgaatgatt	gcgataccac	tgttgccaca	aaagccgctg	ttgccttctt	aggtaccggca	300
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aacgttggcg	tgcagatcct	agacagaaca	ggcaatgctc	tgacgctgga	cggtgcgaca	420
tttagtgcac	aaacaaccct	gaataacggg	accaacacca	ttccgttcca	ggcgcgttat	480
tatgcaatcg	gcgagggaac	cccggttgca	gctaattgcg	atgcaacctt	caagggttcag	540
tatcaataa						549

<212> Type : DNA

20 <211> Length : 549

SequenceName : SEQ ID 564

SequenceDescription :

Sequence

25 -----

<213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

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agcctcaccg	ccgcgcaaaa	agcgacgcta	acccctattt	caaatacaga	atcgctcgttt	120
accgctaaac	ttagcgccta	cggtagcgtg	aaaagcgcgc	tgacgacttt	ccagaccgcc	180
aatactgcat	tgtctaaagc	cgatcttttt	tccgccacca	gcaccaccag	cagcaccacc	240
gcgttcagtg	ccaccaccgc	gggtaacgcc	atcgccggga	aatacaccat	cagcgtcacc	300
catctggcgc	aggcgcaaac	cctgaccacg	cgaccacca	gagatgatac	gaaaaacggcg	360
atcgccaaca	cgacagcaaa	actcaccatt	caacaaggcg	acgacaaaga	tccgattacc	420
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acatcaaatg	acaccggcct	tgataatgcg	atgacactct	cggtcagcgg	tgatgatgcg	600
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acccaactgg	acgtttttaat	gacctcgtaa	aacagcacca	gcagctactt	aacgcagcag	1380
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<212> Type : DNA

<211> Length : 1407

SequenceName : SEQ ID 565

53 SequenceDescription :

Sequence

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<213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

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ggacacacag	ccactaatat	ccgcgtggat	gatggcgga	cgctggatgt	ccgcaacggg	120
ggcaccgccca	ccaccgtatc	catgggaaat	ggcgggtgtac	tgctggccga	ttccggtgcc	180
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accacggtaa	atggcggact	gttcaccgcc	aggggcggca	cactggcggg	caccaccacg	360
ctgaataacg	gcgcataact	taccctttcc	gggaagacgg	tgaacaacga	taccctgacc	420

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atccgtgaag gcgatgcact cctgcaggga ggcgctctca ccggtaacgg cagcgtggaa 480
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ctgaatgaag gcacgctgac gctgaacgac agtaccgtca ccacggatgt cattgtctag 600
cgcggtacag ccctgaagct gaccggcagc actgtgctga acgggtgccat tgaccccacg 660
5 aatgtcactc tcgcctctgg tgccacctgg aatattcccg ataacgccac ggtgcagtcg 720
gtggtggatg acctcagcca tgccggacag attcatttca cctocacccg cacagggaag 780
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gcaaccggaa aaaccatcct gaacctggtg aacgccggca acagtgcgtc ggggctggcg 960
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cagaccggtg taagcggatg aaataacagc gtccgtctca gcattcaggg cgggtcatctc 1260
15 ggtcacgata acaacggcgg tattgcccgt ggagccacgc cggaaagcag cggcagctat 1320
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tactggacc tgcaggccgg actggaagcc cgtgtccggg aaaatatcac cctgggcgtt 2040
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30 <212> Type : DNA
    <211> Length : 2121
        SequenceName : SEQ ID 566
        SequenceDescription :

35 Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
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gatatgtttg ccggttcgaa agtgggactg ggggtaaaag ttgccggtat cactcaggac 180
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aagctggatg aaaaccgtaa cctgttgaat acgcaagggt tacagctgac gggttacccg 360
45 gtaaccggta cgccgccgac tattcagcaa ggggcgaatc cgaccaatat ttcgatcccg 420
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60 <212> Type : DNA
    <211> Length : 1209
        SequenceName : SEQ ID 567
        SequenceDescription :

65 Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T

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caacaacctg ctatccagca accgaatgtc tccggtactg tctggatccg tcagaaagtc      180
5  gcaactgccg ctgatgctgt gctgaccgtg acactttctg acgcgtcggt agccgatgca      240
ccgtcaaaaag tgctggcgca gaaagcgggtg cgtactgaag gtaaacagtc accattcagc      300
tttgttctgc catttaaccc ggcagatgtt cagccgaacg cgcgtattct gttgagtgcg      360
gcgattaccg tgaatgacaa actggtatth atcaaccgata ccgttcagcc ggtgatcaac      420
cagggcgcaa ctaaagccga cctgacattg gtgccgggtac agcaaacccg cgtgccgggt      480
10 cagggcagcg gtggcgcaac gactaccgta ccttcgactt caccaactca ggtgaatccg      540
tcttcggcag ttcccgtctc tacgcaatat taa
<212> Type : DNA
<211> Length : 573
SequenceName : SEQ ID 568
15 SequenceDescription :

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<213> OrganismName : Shigella flexneri 2a str. 2457T
20 <400> PreSequenceString :
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agtgcctttt ttctcaacac agcttacgcc ttgcaacaag aatataatcg tgatacgcaa      120
cccggacatt ccacagagcg ttacacctgg gatagtgtac atcaacctga ttacaacgat      180
attttgtcgc aacgtattca aagtagccaa agggcgctgg gactggaagt caatctggcg      240
25 gaagaaactc ctgtggatgt gaccagcagt atgagtatgg gctggaattt tcttttatat      300
gaacagggtta caaccggccc ggtcgcgcca ttacattacg atggcacaaac cacctcgatg      360
tataacgagt ttggcgacag tactaccacg ctgaccgatc cgttatggca tggcagcggt      420
agtagcttag gctggcgctg tgactcccggt cttggcgatc tccgaccctg ggcgcaaact      480
agctataacc agcaatttgg cgagaatatc tgggaaggcgc aatcaggcct gagccggatg      540
30 acggcgacaa accagaacgg caactggctg gatgtcaccg taggcgctga tatgttgctc      600
aatcaaaata ttgccgccta tgctgcgcta actcaggcag aaaataccac taataatagc      660
gactatctgt atacgatggg ggttagcgcc agatttttaa      699
<212> Type : DNA
<211> Length : 699
35 SequenceName : SEQ ID 569
SequenceDescription :

Sequence
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40 <213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
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gtttccacca ccaatgccac ggtagatctc ggcatctttt attctttcag tcttatgtct      180
45 gccggggcgg catcggcctg gcatgatgtt gcgcttgagt tgactaattg tccggtggga      240
acgtcgaggg tcactgccag cttcagcggg gcagccgaca gcacgggata ttataaaaac      300
caggggaccg cgcaaaacat ccagttagag ctacaggatg acagtggcaa cacattgaat      360
actggcgcaa ccaaaacagt tcaggtggat gattcctcac aatcagcgca cttcccgtta      420
caggtcagag cattgacggt aaatggcgga gccactcagg gaaccattca ggcagtgatt      480
50 agcatcacct atacctacag ctga
<212> Type : DNA
<211> Length : 504
SequenceName : SEQ ID 570
55 SequenceDescription :

Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
60 <400> PreSequenceString :
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tctcaggag ggtgtggagc cgacagcact agcgggtgca caaattacag cagtgtgggt      120
gatgatgtta cgggtgaaca gacagataac gtgacaggac gggagtttac ctctgcaacg      180
ctaagtagca ctaactggca atacgcctgt tctgtctctg cgggtaaggc agttaaactt      240
gtctatatgg tcagccccgt acttaccacc actggacatc agacaggata ttacaaactc      300
65 aatgacagcc tggatattaa aaccacatta caggcaaacg acattccagg actcacaacc      360
gaccagggtg tctctgttaa caccgatttc acacagataa aaagcagcac cgtatattct      420
gctgcaaccc aaacgggtgt ttgccagggt gacacgtctc gttatggacc cgttaatatatt      480
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```
5  ggtgcaaata ccacctttac cctgtatgtc accaagccat ttctcggctc gatgaccatt 540
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    acagggtgact tccatgattt agtcaagtta tcgattcagg gaaatctcac cgccccacag 660
    tcgtgcaaaa ttaatcaggg cgatgttatt aaagttaatt ttggattcat caatggtcag 720
    aagtttacca ccgcgaatgc catgccagac ggttttactc cagtagactt tgatatcact 780
    tatgactgtg gtgatacttc aaagattaaa aactcgttgc aaatgcgcac cgacgggtaca 840
    actggggtag tagaccagta caacctggtc gccaggcgaa gaagttcaga caatgtgccc 900
    gatgtcggta ttcgtattga aaatctcggc ggccggagttg caaatattcc ttttcagaac 960
    ggtatccttc ccgttgatcc ttccgggcat ggacccgtca atatgcgcgc ctggccagtt 1020
10  aatctggtcg gtggtgagct ggaaacagga aaatttcagg gcacagccac cattaccgtc 1080
    atgggtcggt aa 1092
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<212> Type : DNA

<211> Length : 1092

..SequenceName : SEQ ID 571

15 SequenceDescription :

Sequence

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20 <213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

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cccgggtcga cgcccgctcg caacggttct attttccagt ctgctcagcc gattaactat 180
ggctatcaac cgctgtttga agatcgtcga ccacgcaata ttggcgatac gctgaccatc 240
25 gtgttgacag agaacgtcag cgccagcaaa agctcctctg cgaatgccag ccgtgacggg 300
aaaactaatt ttggctttga tactgtgccc cgctatttgc aggggctggt ttgtaacgct 360
cgtgcgcatg tcgaagcctc cggtggtaac acgttcaacg gaaagggcgg ggccaatgcc 420
agcaatacct ttacgggcac gttgacggtg acggttgacc aggtactggt caacggcaac 480
ctgcatgtgg tgggtgaaaa acagattgcc attaatcagg gtaccgaatt tattcgcttc 540
30 tcgggcgtgg ttaatccacg cactatcagc ggacgcaata ccgtaccgtc tactcagggtg 600
cgggatgcgc gtattgaata cgtaggcaat ggctacatta acgaagcgca aaatatgggc 660
tggttgacgc gtttcttctc taacctgtcg ccaatgtaa 699
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<212> Type : DNA

<211> Length : 699

35 SequenceName : SEQ ID 572

SequenceDescription :

Sequence

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40 <213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

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gtgggtgcct ccgaactggc ccgcgcacag ggtaaaacgtg gcggtgtggc gggtgcactg 120
tctcttgccg cggtcacgtc actcccgggt ctggctgctg acatcgttgt gcaccggggt 180
45 gaaacagtga atggcggaac actggtaaac catgacaacc agtttgatc cggaacagct 240
gatggcgtga ctgtcagtag cgggcttgag ctggggccgg acagtgcga aaacaccggc 300
gggcaatgga taaaagcggg tggcacaggc ctgtcaccgc aaatggtcgt 360
cagattgtgc aggcaggagg aactgccagt gatacggtta ttcgtgatgg cggagggcag 420
agccttaacg gactggcggg gaacaccacg ctggataaca gaggtgagca gtgggtacac 480
50 gggggagggg aagctgccgg tacaattatt aaccaggatg gttaccagac cataaaacat 540
ggcgactgg caaccggaac catcgtcaac accggtgcag aaggtggtcc ggagtctgaa 600
aatgtgtcca gcggtcagat ggtcggaggg acggctgaat ccaccaccat caataaaaaat 660
ggccggcagg ttatctggtc ttccgggatg gcacgggaca ccctcattta cgccggtggg 720
gaccagacgg tacacggaga ggcacataac acccgactgg agggggggtaa ccagtatgta 780
55 cacaacgggt gcacggcaac agagacgctg ataaaccgtg atggctggca ggtgattaag 840
gaaggaggaa ctgccgcgca taccaccatc aaccagaaag aaagctgcag gtga 894
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<212> Type : DNA

<211> Length : 894

60 SequenceName : SEQ ID 573

SequenceDescription :

Sequence

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65 <213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

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```
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cttagcagcg gaaaccaagc cttaagcgca gataacatga acaatgccgc aggcattctg 240
caatactgcg cgaagcaaaa gctggcttcg gtaaccgatg ccgaaaacat caagaaccag 300
5 gtgctggaaa agctgggctt gaacagtga gaggcaaaaag aagacaccaa ctatctggac 360
gggtattcagg gtttgcgtga aacaaaagat ggtcagcaac tcaatctgga taacatcgga 420
acgactccgc tggcagaaaa ggtgaaaacc aaagcctgcg atctgggtgtt aaagcagggg 480
ctgaacttca tttcctga
<212> Type : DNA
10 <211> Length : 498
    SequenceName : SEQ ID 574
    SequenceDescription :

Sequence
15 -----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
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gtttatgctgg ctgatgaagg atccgggtgaa attcacttta aagggtgaagt tattgaagca 120
20 ccgtgtgaaa tacatcagga tgatattgat aaagagggtt aactcgggtca ggtgaccacc 180
agccacatta atcagtcaca tcacagcgat gccgttgctg tcgacctgct cttagtcaac 240
tgtgatctgg aaaaactocag caacgggtcc ggtggcaaga tttctaaagt tgcagtcaac 300
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gaagccaccg gcgtcggcgt acgtttaatg aataaagatc aaagcaatat cgttttaggc 420
25 accgctactc cagatatcga cctggctccg acctccagcg aacaaacgct gaatttcttt 480
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gcaacctacg tgctggatta taaataa
<212> Type : DNA
<211> Length : 567
30 SequenceName : SEQ ID 575
    SequenceDescription :

Sequence
35 -----
<213> OrganismName : Shigella flexneri 2a str. 2457T
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ggcaatgctg ctgcaatac taattctggt atgttgatta cgccgcccgc gaaaatgggg 180
40 acgacgtcta cagcgagca accgcaaatt cagccggtac agcagccaca aattcagggt 240
actcaacaac cgcaaatcca gccagtgcag ccagtagctc agcagccggt acagatggaa 300
aacggcagca tcgtctataa ccgtcagtat gggaacattc cgaaaggcag ttatagcggc 360
agtacctata ccgtgaaaaa aggcgacaca cttttctata tcgcctggat tactggcaac 420
gatttccgtg acctgtctca gcgcaacaat attcaggcac catacgcgct gaacgttggg 480
45 cagaccttgc aggtgggtaa tgcttccggg acgccaatca ctggcggaag tgccattacc 540
caggccgacg cagcagagca aggaattgtg atcaagcctg cacaaaattc caccgttgc 600
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gcaagcaca cagagccgac tgctcagcag acatcaacca gtacgcctat ctccacctgg 780
50 cgctggccga ctgagggcaa agtgatcgaa acctttggcg cttctgaggg gggcaacaag 840
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gattacctga gtgcctacgc ccataacgac acaatgctgg tccgggaaca acaagaagt 1020
aaggcggggc aaaaaatagc aacctgggt agcaccggaa ccagttcaac acgcttgcat 1080
55 tttgaaattc gttacaaggg gaaatccgta aaccgctgct gttatttgcc gcagcgataa 1140

<212> Type : DNA
<211> Length : 1140
60 SequenceName : SEQ ID 576
    SequenceDescription :

Sequence
65 -----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
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cgtattcgcg atctcaccag tgttcagggg gtaaggcaaa actcactgat tggctatggc 120
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    ttggtagtggtg ggctggatgg cactgggtgac cagacaaccc agacgccgtt taccacacaa      180
    acgcttaata acatgctctc acagctggga attaccgttc cgacgggcac caatatgcag      240
    ctaaaaaaacg tcgctgcggt aatgggtgaca gcgtcacttc ctccgtttgg acgtcagggg      300
    caaaccatcg atgtgggtggt ttcttccatg ggtaatgcca aaagcttgcg tggaggtacg      360
5    ttgttgatga caccgcttaa gggcggtgac agtcagggtg atgcgctggc gcagggcaat      420
    attctgggtg gcgcgcgagg agcctccgca ggcggtagca gtgttcagggt taaccaactg      480
    aacgggtggac ggatcaccaa tgggtgcggtt attgaacgtg aattgccag ccagtttggc      540
    gtcgggaata cccttaattt gcaacttaac gacgaagatt tcagcatggc gcagcaaadc      600
    gctgacacca tcaaccgcgt gcgtggatat ggcagcgcca ccgcgttaga tgcgcggtact      660
10    attcaggtgc gcgtaccaag tggcaacagt tcccagggtc gtttccttgc cgatatccag      720
    aatatgcagg ttaatgtcac cccgcaggac gctaaagtag tgattaactc gcgcaccggt      780
    tcggtggtga tgaatcgca agtgaccctc gacagctgcg cggtagcgca gggaaatctc      840
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    cagactgtt ttactccaca aacgcagatc gatttacgcc agagcgccgg ttcgctgcaa      960
15    agcgtagctt ccagcgccag cctcaataac gtggtgcgtg cgctcaatgc gctgggcgct      1020
    acgccgatgg atctgatgtc tattttgcaa tcaatgcaaa gtgcgggatg tctgcgggca      1080
    aaactggaaa tcacttga                                     1098
    <212> Type : DNA
    <211> Length : 1098
20    SequenceName : SEQ ID 577
    SequenceDescription :

Sequence
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25    <213> OrganismName : Shigella flexneri 2a str. 2457T
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    tttgctgcag acgttgatac cggaaacatta accattaaag gaaatattgc agaactctccg      120
    tgtaaatctg aagcgggtgg tgattcagta agtattaata tgccgactgt accaaccact      180
30    gtctttgaag gtaaagctaa atattctacc tatgatgatg cagtcggtgt aaccagcagc      240
    atgttaaaaa ttagctgccc gaaagaagtt gctgggtgtaa aactctcgtt gatcacaac      300
    gacaaaaata ccggtaacga taaggcgata gccagtagca acgataccgt aggtgataac      360
    agcgatgtcc tagatgtttc tgcacctttt aacattgaga gttataaaac agcggaagggt      420
    caatatgcta ttccggtttta agcaaaatac ctgaaactga cagataactc agtgcaatca      480
35    ggtgatgtgt tatcttctct ggttatgcgt gtggcgagg attaa      525
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    <211> Length : 525
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    SequenceDescription :

40    Sequence
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    agcggttgtg tcaactgtgc ggacgccatt aaaggcgaca gtaccacgcc gcaacaagat      120
    ttagttcggg tgatgagtg gcgcgagctg tacgttggtc agggaggcacg ctttgggtggc      180
    aaagtgggtg cgttacaaaa ccagcaaggg aaaacccgcc tggaaattgc taccgtaccg      240
    ctggacagcg gagctaggcc gacgctggga gaaccttctc gcggtcgcat ttatgccgat      300
50    gtgaacgggt ttctggacc gggtgatttc cgtggacaac tgggttacggt agtcgggcca      360
    atcacgggtg cggttgacgg caaaatcggc aatacgccct ataaatttat ggtgatgcaa      420
    gtaacgggtt acaaacgttg gcatttaacc cagcagggtg ttatgccgcc tcagccgatt      480
    gatccatggt tttatggcgg tcgtggctgg ccctatggct acggcggatg gggctggtat      540
    aatcccgccc ccgcgagagt acaaacagtt gtaaccgaat aa      582
55    <212> Type : DNA
    <211> Length : 582
    SequenceName : SEQ ID 579
    SequenceDescription :

60    Sequence
    -----
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    <400> PreSequenceString :
65    atgagaaaca aaccttttta tcttctgtgc gcttttttgt ggctggcggt aagtcgcggt      60
    ttggtgcgg atagcacgat tactatccgc ggctatgtca gagataacgg ctgtagtggt      120
    gccgctgaat caaccaattt tactgttgat ctgatggaaa acgcgccgaa gcaatttaac      180
    aacattggcg cgacgactcc tgtcgttcca tttcgtattt tgctgtcacc ctgtggtaat      240

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gccgtttctg ccgtaaaagt tgggtttacc ggcgttgacg atagccacaa tgccaacctg 300
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ccgggttaaac caatacgcgt gaatttttac gcccggttaa tggcgacaca ggtgcctgtc 480
5 actgcggggc atatcaatgc tacggctacc ttcactcttg aatatcagta a 531

<212> Type : DNA
<211> Length : 531
SequenceName : SEQ ID 580
10 SequenceDescription :

Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
15 <400> PreSequenceString :
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20 ccgttcgcgc ataaaaatcgg caccgcggcg accggcgata ttgcaaccgt tcaccatctg 300
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25 gataccaccg ccaattataa gctaggcggg gcacagcaac acgatagcgt acgcctcgat 600
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<212> Type : DNA
<211> Length : 639
SequenceName : SEQ ID 581
30 SequenceDescription :

Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
35 <400> PreSequenceString :
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gatacaggaa cgtattccgg ctccgtttac accgtgaaac ggggggatac gctatatcgt 180
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45 ctgctgggct acggtaatct catcatgatt aaacacagtg aagattacat tacggcttac 600
gcccataatg acagcatgct ggtaataaat gggcaaacg tgaaggctgg gcaaaaaatc 660
gcccatatgg ggagcacgga tgccgcctgc atttccagat tcgttaccgt 720
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<212> Type : DNA
<211> Length : 780
SequenceName : SEQ ID 582
50 SequenceDescription :

Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
55 <400> PreSequenceString :
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gcgaaggatg acgcgcgggg tcaggcgatt gctaaccgtt ttacttctaa cattaaggc 180
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65 gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
gacggttcga tgaaaattca ggttggtgag aatgacggcc agactatcac tattgatctg 480
aagaaaattg actctgatac gctggggctg aatgggttta atgtgaatgg tggcggggct 540

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gtggctaata ctgctgcac taaagctgac ttggtagctg ctaatgcaac agtggctcggc 600
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gcaacgaatt acaagtatga cagtgcgaag aagtcatact cttttgatac cacaacggct 780
5 tcagctgccc atgttcagaa atatttgacc ccgggagttg gtgataccgc taagggcact 840
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20 <212> Type : DNA
    <211> Length : 1653
        SequenceName : SEQ ID 583
        SequenceDescription :

25 Sequence
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    <211> Length : 516
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        SequenceDescription :

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        SequenceDescription :

60 Sequence
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20 SequenceDescription :

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50 Sequence
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35 SequenceDescription :

## Sequence

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SequenceDescription :

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20 <212> Type : DNA
    <211> Length : 1578
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65	tttctgcgtt	ctgtttcaat	tgattcagcc	ttccaagctg	aaagttatat	ccaaatgaaa	4380
	cgtattgcgg	ttggtaacttt	tgaaaatact	tattataata	ctgtcaatgg	ggtaacttac	4440
	agttcaataa	cagtgaaaaac	aactactcct	gaggatccta	cagaccctac	tgatccgcaa	4500

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gatccatcat caccgcgagac ttcaactgta attaactaca aacctcaatc aactgcttat 4560
caaccaagct ctgttcaaga aacattacca aatacgggag taacaaacaa tgcttatatg 4620
cctttacttg gtattattgg ctttagttact agttttagtt tgcttggttt aaaggctaag 4680
aaagattga 4689
5 <212> Type : DNA
  <211> Length : 4689
    SequenceName : SEQ ID 594
    SequenceDescription :

10 Sequence
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<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
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15 gtagcccttg tcctgcctct atataatatt atttttttga gttctatgtg ggatccttat 120
  ggcaaagtat ctgatttacc tgttgcagtt gttataaaag ataaaacggc aacttatgaa 180
  ggaaagaaga tgactatcgg taaagatatg actgataata tgggtccgtaa taaaagtgtg 240
  gactatcatt ttgttgatag cgaaaaagct caaaagggac ttgaaaaagg tgattactat 300
  atgatcatta ctttaccaga agatctttct caaaatgcgg ctagtgtttt aacagatgaa 360
20 cctaaaaagc taacgattcc ttaccaaacy tctaaaggac atagttttgt tgcctccaaa 420
  atgagtgaat ctgctgctaa gacttttaaa gagtctgtgt cgaaaaacat tacaagttct 480
  tacaccaaat ccttttttaa gaatatgtca accctaaaaa caggctcttg cagtgcggct 540
  aatgcaagtc aaaaaatagc gactgggttca aaacagttag caaatggcag tcaagtgatg 600
  actgataatc tgaatttact ttcaaattca agtcaatcat ttgctcaagg gactaatacc 660
25 ttatatctcg gcttaacagc ttatacggga ggtgtcggtc agctttctgc aggtttaaat 720
  aatttaaaac atggttttgac agcttataca aatggagttg tgcagttagc aaatggcagc 780
  agccaactga gcaatcaatc tcagaagctt ctaggaggtg ttgcgcaatt agcgaatggg 840
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  ctgtcaacag caacaggtct ttctgaagaa caagtccaac agtttagctc attgattaat 960
30 cagttgggaa ccttttgatc aagtattcaa aattacagtg ataattgggac agcaacgact 1020
  gcaaatagtc ctgatcttag tacgtattta tctgccatta caacagcagc tcaagcaatt 1080
  gttaattcag gaaatacgtc tcagcaaaaca acaactaatc agtccaatgc attggctgca 1140
  gtccaagcta cagggtgctta tcaaagatta tccgtgagg atcaatcaga gatcgctgca 1200
  gctttggcca acactggtag ttcaacaaca ctagcaggtg ctgatgcaaa cgcagtgta 1260
35 caagcccaag ctatcctaaa caatgtccaa agtattcaaa gtgccttata tactttacag 1320
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40 caatacacta atgcagttga tattcttaat gcaggagcta atactttggc tgctaaaaat 1620
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  gggtccagtg caggaaacct tcccttagcc gttacagata agtttttcca agttgtcaat 2340
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  acaattggta atcaactact agcgtctgag ttatttttcc ttacttttgc tgcttttagga 2460
55 ttgttaatcg ctgaaggag gattaggtct gtcaaatag cctaa 2505
  <212> Type : DNA
  <211> Length : 2505
    SequenceName : SEQ ID 595
    SequenceDescription :

60 Sequence
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<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
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65 aatagaatta atctcctatt ttttttgatt gtcgctttgt ttactgtttt gcttttgagg 120
  ttagctcaga tgcaagcttta tgatgcaaa ttttacaaat cttaattgac agagtcaaca 180

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5  acatatacta taaaaacctc cagccctcgc ggacaaattt atgacgctaa aggggtggct 240
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   aaggatatta aagcaaatgc aaaaaagtta gcagatatgg tgactttaac tgaatctaag 360
   gtaaccaaac gtcagaaaaa agattactat ctggcagatc caaaaaatta tcaaaaaatc 420
10 gttaaaaaat taccaaataa taaaaaatat gataactttg gaaataacct aacggaatcg 480
   aagatctatg caaatgctgt taaagcagtt ccaaacagtg ctattgatta ttctgaagat 540
   gagaaaaaaa tcattcatat tttcagccag atgaatgcaa cctctgtttt taatacagct 600
   tcgttaacaa caggagatgt aacagctgag caattgagc tattggctac aagcaaatca 660
   gatttaaggg gaatttctgt taagactgac tgggaacgta aaacagataa aaattccatt 720
15 acttctatta caggtaaaag ttccagtcac aaacccggtc tgctgtctga agaagccaat 780
   aactatgtta aaaaagggtta ttctctgaat gaccgctgtg gaacatctta tcttgaagag 840
   caatatgaaa acgatttgca aggtagtcgt actgttcaag caatcaaggc taacaaagaa 900
   ggtaaaatta tcagtataaa gaccactgcc aaagggacta aaggaaaaaa tctgaagttg 960
   acccttgatc ttgaatttca aaaaggtggt ttaaccaata ttttaattct 1020
15 gaattagcat ctggaaatac caagtattct gaaggcgttt atgctgttgt tcttaaccctg 1080
   aacacaggtg cagttctttc tatggctggt ttggaacacg accttaaaac gggcgaagta 1140
   tcttctaata ctctggagc gggtactgaa gtctttactc cgggttccgt tgttaaagga 1200
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20 cctcttacag caagtcaatc cttagagtat tcttctaata cttatatggt tcaattggct 1380
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   gaagctatgg aaaaattaa agctacttat gctcaatatg gtttggttgt ctcaacagga 1500
   attgaccttc cgggagagtc aaagggtctat acgccagaac attatgatcc ttctaagtgt 1560
   ttaacagaat catttgggca gtttgataac tatacggcta tgcagctggc acaatatgct 1620
25 gcagctgtcg caaatgggtg taaacgtatt gctccccatt tgggtgaagg tatctatgat 1680
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   aatgtttcta tctctagcga tgacatgggg attatcaagg aagggttcta taatgttgtt 1800
   aacggtggta gttatgcaac aggggaagact cttgcaaaag gggcaagtgt tcccatctcg 1860
   gcaaaaacag ggacagccga agcttacgtg acaggagatg atggtaaatc tgtttataca 1920
30 tccaatttaa acgttggttc ttatgcacca agcagcaatc ctcaaattgc tgtagctggt 1980
   gtcttgccac atgagacaga ccttcatgga accactagtc atgctattac gagagatata 2040
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<212> Type : DNA

<211> Length : 2079

35 SequenceName : SEQ ID 596  
SequenceDescription :

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40 <213> OrganismName : Streptococcus mutans UA159
   <400> PreSequenceString :
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   cttaaaagcta ctaattctag tttggtttat gatagcaata ataactctgat tgctgattta 180
45 ggtgctgaaa agcgcgaaaag tatttcttca gacagtattc caatgaagtt agtaaatgcc 240
   gttactctta ttgaagatca ccgtttcttt aaacatcgtg gtgtcgacat ttatcgtatt 300
   attggtgcag cttggagtaa tttacttcat aaatcaactc aagggggatc cactcttgat 360
   cagcagctta tcaagctggc ctatttctct actaaagagt ctgatcagac cttaaaacgt 420
   aaagctcaag aagtttggct gtctctacaa atggagaaaa aatacacgaa agaagagatt 480
50 ctaacttttt atgtcaataa gggtttacatg ggtaaatggga attacggaat gcgcactgct 540
   gcaaagtctt attatggcaa ggatcttaaa gacttatcaa ttgcccagct agcgacactc 600
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   agcagacgta ataccgtttt gtcacagatg tataaacata aaaaaattac aaaacgagaa 720
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   cagcaatatc tctggaacat ttataatata gatgaatata ttgcttatcc tgatgataat 960
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   ggacgccatc aagataccaa tgtttctttt ggtaccaatc aggtgtgtct aactgatcgt 1080
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65 agtaatacaa gtagttcaga acaaaagtat ggtgccagca gtgaaaaaat ggccgctgct 1440
   tatgtgctct ttcttaattg ttgaaccac aatacgtcaa taaaatagaa 1500
   ttttaaggatg gaacatcaga gacctatgat gctaaaggca atcgtgcgat gaaagaaacg 1560

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acagcctaca tgatgacaga tatgttaaaa acagtattaa catatggtag tggtagtgag 1620
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5 aaaaatcgct taatgcctgt ttacggagac agtatgaaaa ttgctgcgca agtctatcgt 1860
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gcagctcctg caacttcacg gtcattctct tcatcatctt cttctgattc aaacaataac 2040
gatcaaaata ataatacaac tacagaagcg tctagttagt catcttcacg aagttctgat 2100
10 gctacgacat cttctaatac ataa 2124

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<212> Type : DNA

<211> Length : 2124

SequenceName : SEQ ID 597

SequenceDescription :

15

Sequence

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<213> OrganismName : Streptococcus mutans UA159

<400> PreSequenceString :

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cctactgctg atacacaagc atcagaaccg gctgcaacag aaaaagaaca gtctcctgtt 180
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tctaaagaat tggaaagatg taaggctaat gctaactcagg aagggtttaga agtcactgaa 300
25 actgaagctc aaaaacagcc ttcggttagaa gctgcagatg cagataacaa agcacaggca 360
caaaacaatta atacagcggg agctgattat caaaaggcaa aagctgaatt tcctcaaaaa 420
caagaacaat ataataaaga ttttgaaaag tatcagttct atgtcaagga gtatgaagct 480
caaaaggcag cttacgagca atataaaaaa gaagtgcac aagggttggc atctgggcgt 540
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30 ggtgttaatc agtacctaac aaaagaagca cgtcaaaaac atgcaactga agatattctt 660
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50 aaagaaaact ag 1752

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<212> Type : DNA

<211> Length : 1752

SequenceName : SEQ ID 598

SequenceDescription :

55

Sequence

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<213> OrganismName : Streptococcus mutans UA159

<400> PreSequenceString :

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acaagcgttc aacaagaaac tgctcctcaa caaacgaaaa cttctcaaag ctgagacgca 240
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65 gatcatatatt caaaaacatc agccgctaca actgaagatc aagaagagaa agttaattct 420
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gctgatgtaa cctataatgg cgtgagggat gaatatattg tagttaacga tcctagtgtc 600
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tcaaaaagaa aatccttaaa ataa 1524
<212> Type : DNA
<211> Length : 1524
20 SequenceName : SEQ ID 599
SequenceDescription :

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25 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
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2181
<212> Type : DNA
65 <211> Length : 2181
SequenceName : SEQ ID 600
SequenceDescription :

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Sequence  
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<213> OrganismName : Streptococcus mutans UA159  
5 <400> PreSequenceString :

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tatttttggtt	tcatgcacagc	tattttctta	actctttggt	tttttacgca	agtctcgtgg	660
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50 <212> Type : DNA  
<211> Length : 2574  
SequenceName : SEQ ID 601  
SequenceDescription :

55 Sequence  
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<213> OrganismName : Streptococcus mutans UA159  
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aatccatttt	cttatagaaa	aaagggaaaa	ttgacgggat	atgatatcga	agttgctaag	180
gaagttttca	aagcttctga	taaatacagat	gtcaaatatc	aaaaaacaga	gtggaccagc	240
attttctctg	gtctagatag	tgacaaaatat	caaatcggag	ctaacaatat	cagttatact	300
aaagagcgtg	ccaataaata	tctttattct	aatccaacgg	cttccaatcc	attgggtatta	360
gtggttccaa	aagatagtga	tattaagtct	tataacgata	ttgctgggca	tagcactcaa	420
gttgttccaag	gaaatacaac	agtgtctatg	ctgcagaaat	tcaataaaaa	ccatgaaaac	480
aatcaagtta	aactaaactt	taccagtga	gatcttgcgc	atcaaatccg	gaatgtcagt	540

gatggtaagt atgatttttaa aatttttgaa aaaatttcag cagaaacgat catcaaagag 600  
caaggacttg ataatttgaa agttattgat cttccttcag accaaaaacc atatgtttac 660  
tttatttttg cgcaagacca aaaagactta caaaagtgtt tcaataaacg tctcaaaaaa 720  
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<211> Length : 804  
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SequenceDescription :  
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ttaaaaaaaa atcaattaaa tgggatcatg attgtgacgg ggccagatgg taaggctcaa 180  
gtattttcaa atcaaagcaa ggtagatggc agtcctgttt caattaagga ttattttcct 240  
cttgcttctt tacaaaaatt gataacaggg gtggctatcc aacaattaat tgataaagga 300  
20 aaactgtctt taaacacacc tttaagcaaa tattatcctc aaattgaaaa tagtgaaaaa 360  
atcacgatac aaaatttact taccacaca agcggtttgg cagatcgaaa agaagttcct 420  
cagcaagtgc tgacaactca agagcagcaa ttggattttt cattgaccaa ttatcgcgta 480  
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25 aaggggtggc attttaaaaa gtatattcaa ataaaagata agtccaagt agctgccttg 660  
tcagtgatgg atcaaagtac gacttgggat aagctgtcaa aagaagtgac atctaccttt 720  
ggagctggtg attatgcttc taggccagt gattattgga aatttatgat ggcttttatt 780  
aatgaccaat ttgttcctgt cagcgaatac caacgttcta tgaaaatgac ttctaagagc 840  
tattatggcg gcctctatat cagccaaaag atgctgcatg caaatggtgg tggctttgat 900  
30 acttactctt gttttgctta ttcaaactct aaaaccaaag aggtcatggt tttgtttatc 960  
acaaacggtg agtataaacg ggtcaaatcc ttagcagcta aagcctttta actatatgca 1020  
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<211> Length : 1059  
SequenceName : SEQ ID 603  
SequenceDescription :  
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40 <213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :  
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tgcagctcag cacctgggtg ttcatcagat gcagctggta ataaaattgg agatactgta 120  
aaaattgggtt acaatcttga attatcagga gatgtagccg cttatggaca agctgaaaag 180  
45 aacggtgcta accttgctgt tgaagagatt aataagcag gcggcattga tggcaaaaag 240  
attaaagtta tctcaaaaaga taataaatct gataacgggtg aagcatcaac aatctcaact 300  
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gcggtgctg ctcccaatgc caacgatgct gcagtaccac tcgtaacgcc ttctggaaca 420  
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50 caagatagct tccaaggaaa gatcattgcc aaatatgcaa cagataattt gaaagctaaa 540  
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aaaaaagcat ataaagggaa gattactgtt gaagatacct ttcaagctaa agaccaagat 660  
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tattatactg aaactggtct gattacaaag caagcacgtg atatggggct taccagcct 780  
55 atcttaggac ctgatgggtt taatgatgaa aaatatgttg aaggtgctgg tgcagccaat 840  
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gaaaaattcc tgaaagatta taaggctaag tatggtgaag agccaaatat gtttgccgct 960  
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60 attgataaga aacataaccc tgtaaatca gccgttatgg ttggtcttaa agatggttaa 1140  
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<212> Type : DNA  
<211> Length : 1173  
SequenceName : SEQ ID 604  
SequenceDescription :  
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<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
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  actttctaaaa aaacagccga caaaaaattg actgttgtgg ctaccaattc tattattgct 120
  gatattacta agaatatcgc tggtaataag gttgtcttac atagtatcgt tctgtgtggg 180
  cgagatcctc acgaatatga gcctcttctc gaagatgtta aaaagacctc tcaggctgat 240
  gtcatttttt ataatgggat taatcttgaa aatggaggca atgcttgggt taccaaaacta 300
  gttaaaaaatg ctcataaaaa gacagacaag gattattttg cagtgaagca tagtggttaag 360
10 accatttatt tggaaaaatgc aaaagaaaaa ggaaaggaag atcctcatgc ttggcttgac 420
  cttaaaaaatg gtattattta tgctaaaaat atcatgaaac gtctatctga aaaagatcct 480
  aaaaacaaga gttattatca gaaaaatttt caagcctaca gcgccaaact tgaaaaacta 540
  cacaagtag ccaagaaaaa aatcagtcgt atccctactg agaagaaaat gatcgtaact 600
  agtgaagggt gtttcaagta tttctctaag gcttacgata ttccttctgc ctatatatgg 660
15 gaaattaata ccgaagaaga gggaacacca aatcaaatta aggccttagt gaaaaaatta 720
  aggaaaagtc ggggtgtctgc gctttttgta gaaagcagtg ttgatgatcg tccaatgaaa 780
  actgtttcaa aagatacagg tatcccaatt gccgctaaaa tttttacaga ttcagttgct 840
  aaaaaggagc aggcctggaga tagttactat gcgatgatga agtggaaatag agataaaatt 900
  gcaaatggtc tgtcacaaatg a 921
20 <212> Type : DNA
  <211> Length : 921
      SequenceName : SEQ ID 605
      SequenceDescription :

25 Sequence
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<213> OrganismName : Streptococcus mutans UA159
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  ctgcttcttt ttttattgcc tatttgtgtc gtattggctt ttatttgtgt atttattggc 120
  ggtggtacag ctgagtctca tgatgtggaa ggcagcagag ggggcgttaa gctttcagct 180
  aagcaatttg cagataagac aaagttagga atttcagaag aggaagctaa aaatgcctta 240
  gcttttgccg atagggtgat gtctcgctcat cattttacag ctcaagcaac tgctggagta 300
  ttggctgttg gctttcgtga aagtggcttt gatgtcaaaag cagttaataa ttctggtggg 360
35 gtagctggct ttttccaatg gtctggctgg ggtagtcttg ttaatggtga tcgttggaat 420
  gtagctagta aaagagagtt aactctagag gttgaggtag atttgatgag cactgaacta 480
  gatggctgat atgctgatgt tgtcaaaaaa gttgggtctg cgactgatga aaaacaggct 540
  cttaaggatt ggtctcagta ttatgaaggt ttggtcggtta gtgatggtca aacgaaagct 600
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40 tatgctaaag tgaataatac gggaacaagt tctactgcta tccgcagggg ttgggaaaaa 720
  attagtgtct ttgatggcca tgcttatgaa ggtagtgaat attatcctca aggacaatgc 780
  acttggtatg tttataatcg tgctaaacag ttgggtgtta gcttcagttc ttatatgggg 840
  aatggcggtc agtggtatca agtgcaaggc taccattcta gtcatacacc taaagcacat 900
  acggccttat cttttgtcaa tggtcaggca gggtctgatc caacttatgg tcatgttgct 960
45 tttgtagagg ctgttaaaaga tgatgggagt attctaatac gtgagatgaa cgtttatggg 1020
  caaccagcta tgacgggtgc ctatcggaca tttgatgctg aaactgctaa acaattttgg 1080
  tatgtagagg gaaaaataa 1098
  <212> Type : DNA
  <211> Length : 1098
50 SequenceName : SEQ ID 606
  SequenceDescription :

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55 <213> OrganismName : Streptococcus mutans UA159
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  ttttgggtaa cgaagattgt aaaagctgac caagtcacaa attatacaaa tacggcttct 120
  atcacaaaat cagatggtac agcactttct aatgatccat ctaaggctgt taattattgg 180
60 gaaccacttt ctttcagtaa ttctattact ttcccagatg aagtcagtat taaggctggg 240
  gatactttta ccattaagtt gccagagcaa ttacaattta cgactgctct aactttcgtat 300
  gttatgcata ccaatgggca attagctggg aaagcaacaa ctgactcctaa tacaggagaa 360
  gtaacagtta cctttactga tatttttgaa aaactgccta atgataaggc tatgacatta 420
  aattttaatg cacaattgaa tcataacaat atttctattc ctggtgttgt aaactttaac 480
65 tataataatg ttgcttatag ctcttatggt aaagacaaag atattacgcc aataagttcca 540
  gatgtttaaca aagtggtgta tcaggataaa agtaatctg gtttgattca ctggaaaagt 600
  ctcatataca acaacaagg tgctattgat aatttgactt tgactgatgt tgtcggagaa 660
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gatcaagaaa tcgtaaaaga ttccttggtt gctgcacgct tgcagtacat tgctgggtgat 720
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gttacttata aaactaatga tttaggattg acaacaggat ttacctatac aattccagga 840
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5 ggtaaagatg tcagcaacac tattgctatt tcaggaaata atattaatta ttccaatcaa 960
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10 ccgacaacaa caaacataac aacaacttca aaacaagtaa ccaagcaaaa agcgaaattt 1260
gttttaccat caacaggtga acaagcaggg cttttgttaa ctactgtagg tcttgtaatt 1320
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<212> Type : DNA
<211> Length : 1362
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SequenceDescription :

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20 <213> OrganismName : Streptococcus mutans UA159
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gttggtgctg ttagtcggga ctatgctcct tttgagttca aggctcttgt gaacggtaag 180
25 gatactgttg ttggtgctga tattgatttg gcaaaagcaa ttgctaagaa attgggagtg 240
aaactggaat tatcttccat gaggttttgat aatgtcttgt ccagtttaaa aacaggaaaa 300
gcagacatag ctatctcttg tttatcttat accaaggaaac gtgctcaagc ctatgacttt 360
tcagaagctt attataaaaac ggaaaaatgct attcttatta aaaagtctga tttgaacaaa 420
tatacaatga tttcttcttt taataataag actaaagtag ctgttcaaaa aggaacgatt 480
30 gaagaaggat tagctaaaaa tcaattaaaa caatcaacaa ttacctcttt gacttcgatg 540
ggcgaagctg ttaatgagct caaatctggt cagggttgatg ctattgatct tgaaaaacca 600
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acgggtgaata aggttattaa gaaactcaaa aaagaagata aatacaagca gtttatcagc 780
35 gatgctgtta aattaactgg tcagcaagtg gattga 816
<212> Type : DNA
<211> Length : 816
SequenceName : SEQ ID 608
SequenceDescription :

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40 <213> OrganismName : Streptococcus mutans UA159
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tggtccaatc ttcccgattc tggacagagg aattgggata agataataaa gagaggaatg 120
cttaaaattg ctactgcagg aacgctttat ccgcaatctt atcatgatga tcataataaa 180
ttgacgggtt atgatgttga aattctaaaa gaaataggaa aacgtttggg attgaaagt 240
cagtttactg aaatgggtgt cgatgggtatg ctgacagcca tcaagagcgg tcagatcgat 300
50 gttgctaatt attccctaga agacggcaac aaaaatatca gtaagttttt gagaacctct 360
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attgctaaaa aattaggagc aaaattagtt gtctatgata atgtcaccaa cgatgtttat 540
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55 atagctgttg cagcagtcac agacaaatac gctatcaaaa taaaccaagg actttatgcc 660
aatccttaca gcaactagtt tacattgtct ttgaaaaaca aagtactgca aaagaaaatc 720
aataaggctg tgaagacat gcgcaaggat ggcaccctaa ccaagctatc taagaagttt 780
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60 <212> Type : DNA
<211> Length : 852
SequenceName : SEQ ID 609
SequenceDescription :

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65 <213> OrganismName : Streptococcus pneumoniae R6
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<400> PreSequenceString :
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agaacctact acaaaaaagg ggctctaaaaa gaaacctact ggagagtgat agatgggaag      180
5  tactattatt ttgatccttt atccggagag atgggtgtcg gctggcaata taccctgct      240
ccacacaagg gggttacgat tggtocttct ccaagaatag agattgctct tagaccagat      300
tggtttttatt ttgggtcaaga tgggtgtctta caagaatttg ttggcaagca agtttttagaa      360
gcaaaaactg ctacgaatac caacaaacat catggggaag aatatgatag ccaagcagag      420
aaacgagtcct attattttga agatcagcgt agttatcata ctttaaaaaac tggttggatt      480
10 tatgaagagg gttattggta ttattttacag aaggatgggt gctttgatcc tcgcatcaac      540
agattgacgg ttggagagct agcacgtggg tgggttaagg attaccctct tacgtatgat      600
gaagagaagc taaaagcagc tccatgggtac tatctagatc cagcaactgg ctggcaaaac      660
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gaagggttcca cttgggtacta tctaaatgca agtaatggag atatgaaaac aggctgggtc      780
15 caagtcaatg gtaactggta ctatgcctat gattcagggt ctttagctgt taataccaca      840
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<212> Type : DNA
<211> Length : 885
      SequenceName : SEQ ID 610
20      SequenceDescription :

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<213> OrganismName : Streptococcus pneumoniae R6
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aaatattatg taaaagatga tcataaagca atctattggc ataaaaataga cggtaaaact      180
30 tactattttg gtgatatggg agagatgggt gtccggttggc aataacttaga aattcctgga      240
acagggttatc gtgataattt attcgataaac caaccagtta atgaaattgg ccttcaggag      300
aagtgggtact attttggaca agatgggtgct ttgctagaac aaacagataa acaagtacta      360
gaggcaaaaaa cgtctgaaaaa tacaggaaaaa gtatacgggtg aacaatatcc tctatctgct      420
gaaaagagaa cttattattt tgataataat tatgctgtaa agacaggctg gatttatgaa      480
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35 ctaccaattg gtgaagttgc taagggttgg actcaagatt ttcattgttac tattgacatt      600
gatagaagca aaacctgctcc atggtaactac ctatagctct caggtaagat gcttacagat      660
tggcaaaaag taaacggaaa atgggtattat ttgggtctct ctgggttctat ggcaacagg      720
tggaaatatg tacgaggcaa atgggtattac tttagataata aaaatgggtga tatgaaaaca      780
ggatggcaat accttggtta caagtgggtac tacctccgtt catcaggagc tatggtaact      840
40 ggctgggtatc aagatgggtt aacttgggtac tacctaaatg caggtaatgg agacatgaag      900
acaggttggtt tccaggtcaa tggcaaatgg tactatgctt atagctcagg tgccttggca      960
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<212> Type : DNA
45 <211> Length : 1017
      SequenceName : SEQ ID 611
      SequenceDescription :

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50 <213> OrganismName : Streptococcus pneumoniae R6
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55 aaagctgaga aagactatga tgcagcgaag aaagatgcta agaattgcga aaaaagcagta      180
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cagaagaaaaa ctgaggagaa agccgcgcta gaaaaagcag cgtctgaaga gatggataag      300
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60 aaatttaata ctgttcgagc aatggtagtt cctgagccag agcagttggc tgagactaag      480
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gaagaagtcg ctctcaagc taaaatcgct gaattggaaa atcaagttca tagactagaa      660
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65 gctcctcttc aatctaaatt ggatgccaaa aaagctaaac tatcaaaact tgaagagtta      780
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5 gaatataatc gcttgactca acagcaaccg ccaaagctg aaaaaccagc tcctgcacca 1200
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gctacagggt gggtctaaagt caacgggttca tgggtactacc tcaacgctaa tgggtgctatg 1680
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15 aaagcaagcc aatgggttcaa agtatcagat aaatgggtact atgtcaatgg tttaggtgcc 1800
cttgacgtca acacaactgt agatgggtat aaagtcaatg ccaatgggtga atgggtttta 1860

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20 SequenceName : SEQ ID 612

SequenceDescription :

Sequence

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25 <213> OrganismName : Streptococcus pneumoniae R6

<400> PreSequenceString :

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tattccagag gaaatggatc gattgcgcgt ggggatgatt atcctgctta ttataaaaaa 180
30 gggagccagg agattgatca gtggcgcatg tattctcgtc agtgacttcc ttttgtagcc 240
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tggggacatc gtgctcgctc ggaagggttat cgtgtagata atacaccgac gattgggttcc 360
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gatcagattg agattgagga atataactat ggttatacag aatcctataa taaacgagtt 480
35 ataaaagcaa acacgatgac aggtatttat cattttaaag atttggtatg tggcagtggt 540
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tggtattatt ctactcttc agggcgctta gctattaata cgacgggtgga tggctacaga 1320
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50 <212> Type : DNA

<211> Length : 1347

SequenceName : SEQ ID 613

SequenceDescription :

55 Sequence

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<213> OrganismName : Streptococcus pneumoniae R6

<400> PreSequenceString :

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gaggaagta ccaagcagc cacttcttct aatatggcaa agacagaaca taggaaagct 180
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65 gcaaaagtta acgcagcttt tgagaagttt aaaaaagata cattgaaacc aggagaaaag 420
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	ttcgaatgtga	aagttaaaga	agcggagctt	gaactagtaa	aagagggaagc	taaagaatct	600
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	acaagggttag	aaaacatcaa	gacagatcgt	aaaaaagcag	aagaagaagc	taaacgaaaa	720
	gcagatgcta	agttgaagga	agctaattgta	gcgacttcag	atcaaggtaa	accaaagggg	780
5	cgggcaaaac	gaggagttcc	tggaagccta	gcaacacctg	ataaaaaaga	aatgatgcg	840
	aagtcttcag	attctagcgt	aggtgaagaa	actcttccaa	gctcatccct	gaaatcagga	900
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	ccggctactc	aaccagaaaa	accagctcca	aaaccagaga	agccagctga	acaacaaaaa	1320
	gcagaaaaaa	cagatgatca	acnagctgaa	gaagactatg	ctcgtagatc	agaagaagaa	1380
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25	atgaaagcaa	gccaatgggt	caaagtatca	gataaatggt	actatgtcaa	tggtcaggt	2040
	gcccttgcag	tcaacacaac	tgtagatggc	tatggagtca	atgccaatgg	tgaatgggta	2100
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2106

30 SequenceName : SEQ ID 614

SequenceDescription :

Sequence

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35 &lt;213&gt; OrganismName : Streptococcus pneumoniae R6

&lt;400&gt; PreSequenceString :

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	agttcgggaag	taatcaaaaga	gactaaagtt	ggaagtatta	ttcaacaaaa	taatatcaaaa	180
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	gatgaaacag	gtagaattgt	ctactatcct	agctctatta	ctatcccatc	aagcataaaa	420
	aaaatacaaa	aaaaaggctt	ccatgggaagt	aaagctaaaa	ctattattttt	tgacaaaggc	480
45	agtcagctgg	agaaaattga	agatagagct	tttgattttt	ctgaattaga	agagattgaa	540
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65	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1740
	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1800
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5  <212> Type : DNA
    <211> Length : 2073
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        SequenceDescription :

10  Sequence
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20  acgcttgata cagggaagttt agctggaatt aaaacgcacg agtattgcac gaataaccaa 420
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25  aggaagcaca cagacgggcaa ctgggtactgg ttccaacact caggcgaaat ggctacaggg 720
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    aatgccttta tccagtcagc ggacggaaca ggctgggtact acctcaaacc agacggaaca 900
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    <211> Length : 957
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        SequenceDescription :

35  Sequence
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    gcgcgcacgc aaggcacagc cgcccggtgc cacgcgcgcg agcaaaacgg ttttgaagcc 180
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45  atcgacagaa aagcagcatt acgctcgctg atgtgggtgg gcggatttgt ctgcaccgtc 360
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    <211> Length : 384
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        SequenceDescription :

50  Sequence
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    tggaatatta aggggtgtta aactggctca acaactgggtc aatcagaaaa tgtcgatttc 720

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20 <211> Length : 1779
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25 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
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gatgtgcgcc atgccaacga ctatggccct atgcccattg caggtgcggc aggcgacagc 780
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60 ttctacgatg acatttacag aggcgatata cataccgtct tttttgaacc gcgcagtaac 960
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65 aacatcaacc aaggcgcggg cggtttgat tttgaagggt attttacggg ctgcctgaa 1260
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	caagccaaag	gggaaaacca	aggctcgatc	agcgtgggcg	acggtacagt	cattttggat	1440
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	aggggtacgg	tgcaactgaa	tgccgataat	cagttcaacc	ccgacaaact	ctatttcggc	1560
	tttcgcgggc	gacgttttga	tttaaacggg	cattcgcttt	cgttccaccg	tattcaaaat	1620
5	accgatgaag	gggcatgat	tgtcaatcat	aatgccacaa	caacatccac	cgttaccatt	1680
	acagggaatg	aaagtattac	acaaccgagt	ggtaagaata	tcaatagact	taattacagc	1740
	aaagaaattg	cctacaacgg	ttggtttggc	gagaaagata	cgacaaaaac	gaacgggagg	1800
	ctcaaccttg	tttaccagcc	cgccgcagaa	gaccgcaccc	tgctgctttc	cggcgggaac	1860
	aatttaaacg	gcaacatcac	gcaaacaaac	ggcaaaactgt	ttttcagcgg	cagaccgaca	1920
10	ccgcacgcct	atcaatgctt	aggaaagcgg	tggtcaaaaa	tggaaaggat	cccacaagga	1980
	gaaatcgtgt	gggacaacga	ctggatcaac	cgacgtttta	aagcggaaaa	tttccatatt	2040
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	gtgtcagaca	cgccgcggcg	ccgttcggcg	cgttccctat	tatccgttac	accgccaaat	2820
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	caattgacgg	tagtggaagg	gaaagacaac	aaaccgctgt	ccgaaaaact	taatttcacc	3060
	ctgcaaaaac	aacacgtcga	tgccggcgcg	tgccgtttacc	aactcatccg	caaagacggc	3120
30	gagttccgcc	tgcatatatt	gggtcaagaa	caagagcttt	ccgacaaaact	cggaaggcca	3180
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40	cgcgctggca	tctgtttttc	gcacaaccgg	accgaaaaac	ccttcgacga	cggcacgggc	3780
	aactcggcac	ggcttgccca	cggcgccgtt	ttcgggcaat	acggcatcgg	caggttcgac	3840
	atcggcatca	gcacggggcg	gggttttagc	agcggcagtc	tttcagacgg	catcggaggc	3900
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	ggattcggca	tcgaaccgta	catcggcgca	acgcgttatt	tcgtccaaaa	agcggattac	4020
45	cgctacgaaa	acgtcaatat	cgccaccgcc	ggcttgcgt	tcaaccgcta	ccgcgcgggc	4080
	attaaggcag	attattcatt	caaacccggc	caacacattt	ccatcacgcc	ttatttgagc	4140
	ctgtcctata	ccgatgccgc	ttcgggcaaa	gtccgaacac	gcgtcaatac	cgccgtattg	4200
	gctcaggatt	tcggcaaaaac	ccgcagtgcg	gaatggggcg	taaacgccga	aatcaaagg	4260
	ttcacgctgt	ccctccacgc	tgccgcggcc	aaaggcccg	aactggaagc	gcaacacagc	4320
50	gcgggcatca	aattaggcta	ccgctggtaa				4350

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 4350

SequenceName : SEQ ID 620

SequenceDescription :

55

Sequence

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&lt;213&gt; OrganismName : Neisseria meningitidis serogroup A strain Z2491

&lt;400&gt; PreSequenceString :

60	atgaacaccc	ttcaaaaagg	ttttaccctt	atcgagctga	tgattgtgat	tgccatcgtc	60
	ggcatttttg	cggcagtcgc	ccttctgtct	tatcaagact	acacagcccg	cgcacaagtt	120
	tccgaagcca	ttcttttagc	cgaagggtcaa	aaatcagccg	tcaccgagta	ttacctgaat	180
	cacggcggaat	ggcccagcaa	caacactttc	gcccgcgtgg	catcctccac	cgacattaaa	240
	ggcaaatatg	ttcaaaagcg	tgaagtcaaa	aacggcgctg	ttaccggccac	aatggcttca	300
65	agcaacgtaa	acaacgaaat	caaaggcaaa	aaactctccc	tgtggggccaa	gcgtcaagac	360
	ggttccgtaa	aatggttctg	cggacagccg	gttaagcgca	acgacaccgc	caccaccaac	420
	gacgacgtca	aagccgacac	cggccgcaac	ggcaagcaga	tcgacaccaa	gcacctgccc	480

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tcaacctgcc gcgacgcagc atctgccgga taa 513
<212> Type : DNA
<211> Length : 513
      SequenceName : SEQ ID 621
5      SequenceDescription :

Sequence
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<213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
10 <400> PreSequenceString :
    atgcaagcac ggctgctgat acctattcct ttttcagttt ttattttatc cgctgcggg 60
    aactgacag gtattccatc gcatggcgga ggtaaacgct ttgcggtcga acaagaactt 120
    gtggccgctt ctgccagagc tgccgttaaa gacatggatt tacaggcatt acacggacga 180
    aaagtgtcat tgtacattgc aactatgggc gaccaagggt caggcagttt gacagggggg 240
15 cgctactcca ttgatgcact gattcgtggc gaatacataa acagccctgc cgtccgtacc 300
    gattacacct atccacgtta cgaaaccacc gctgaaacaa catcaggcgg tttgacaggt 360
    ttaaccactt ctttatctac acttaatgcc cctgcactct cgcgcaccca atcagacggg 420
    agcgggaagta aaagcagtcct gggccttaaat attggcgga tgggggatta tcgaaatgaa 480
    accttgacga ctaaccgcgc cgacactgcc tttctttccc acttggtaca gaccgtattt 540
20 ttcctgcgcg gcatagacgt tgtttctcct gccaatgccg atacggatgt gtttattaac 600
    atcgacgtat tcggaacgat acgcaacaga accgaaatgc acctatacaa tgccgaaaca 660
    ctgaaagccc aaacaaaact ggaatatctc gcagtagaca gaaccaataa aaaattgctc 720
    atcaaaccaa aaaccaatgc gtttgaagct gcctataaag aaaattacgc attgtggatg 780
    ggaccgtata aagtaagcaa aggaattaaa ccgacagaag gattaatggg cgatttctcc 840
25 gatatccaac catacggcaa tcatatgggt aactctgcc catccgtaga ggctgataac 900
    agtcatgagg ggtatggata cagcgatgaa gcagtgcgac gacatagaca agggcaacct 963
    tga
    <212> Type : DNA
    <211> Length : 963
30      SequenceName : SEQ ID 622
      SequenceDescription :

Sequence
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35 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
    atgcgcccac tcttcctatc tttcgtttta ttcctatatt tgataaccgc ctgcagcaca 60
    ccggacaagt ctgcccgatg ggaaaatatc ggcacaatct caaacggcaa tattcataca 120
    tatatcaata aagacagcgt gagaaaaaac ggaaatctga tgattttcca agataaaaaa 180
40 gttgttacca atctaaaaca agaacgtttt gccaacaccc ccgcatacaa gactgccatt 240
    gccgagtggg aaatccactg caacaacaaa acataccgct taagttcgct acaattgttt 300
    gatacaaaaa acacggaaat ttccacacaa aactacacag cctcttcct cgcgccgatg 360
    agcatcctgt ccgggacatt aaccgaaaaa caatatgaaa ccgtatgcgg aaaaaaactc 420
    tga 423
45 <212> Type : DNA
    <211> Length : 423
      SequenceName : SEQ ID 623
      SequenceDescription :

50 Sequence
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    <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
    atgaacaaac ttttcattac cgccctgtcc gccctgcgct tgtcgcgctg cgccggcact 60
55 tgggagggcg cgaaacaaga caccgcccgc aaccttgaca aaacacaggc cgccgccgaa 120
    cgccgccgcc aacaaacagg caacgccgtc gaaaaaggct gggacaaaac caaagaagcc 180
    gtcaaaaaag gcggcaatgc cgtcggacgc ggcatttccc atctcggcgg aaaaatcgaa 240
    aacgccaccg aataa 255
    <212> Type : DNA
60 <211> Length : 255
      SequenceName : SEQ ID 624
      SequenceDescription :

Sequence
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65 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
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atgaaactcc tcttcatccc cctagtcttc ttctgtcgccg tcgaacattt ctacatcgcc      60
tggcttgaaa tgacgcagat tcccagcgaa aaagcggcgg aaacgttcaa gctgccttat      120
gaattttatgg aacaaaatcg cgtgcagacc ctgttcggca accaagggt gtataacggc      180
tttctcggca tggggctggt gtggtcggcg tttgcccgtc cggataacgc ggtgtacggc      240
5 gcaacggtac tgtttctcgg ctctgtcctg attgccgcgc cgtggggcgc gttctcttcc      300
ggcaacaaag gcatactcgt caaacaaggt ttgcccgcac ttttggcagc ggcggcgggtg      360
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<212> Type : DNA
<211> Length : 372
10 SequenceName : SEQ ID 625
SequenceDescription :

Sequence
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15 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
atggcttcaa gcaacgtaaa caacgaaatc aaagacaaaa aactctccct gtggggccaa      60
cgtcaagacg gttcggtaaa atggttctgc ggacagccgg ttaagcgcga cgcgccacc      120
gacgccgacg tcaccgccga cagcggcaac gaaatcgaca ccaagcacct gccgtcaacc      180
20 tgccgcgacg cagcatctgc cgtttgcaca aaaaaccccg agtattaccc gaatcacggc      240
gaatggccga aaaacttcgt cattcccgcg caggcgggaa tccaggtctg tcggcacgga      300
aacttatcgg gtaaaaaggt ttctccggtc ctgagttcta gattcccact ttcgtgggaa      360
tga
<212> Type : DNA
25 <211> Length : 363
SequenceName : SEQ ID 626
SequenceDescription :

Sequence
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30 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
atccttttag ccgaaggtca aaaatcagcc gtcaccgagt attacctgaa tcacggcgaa      60
tggcccagca acaacacttc tgccggcggtg gcaacctcca ccgacattaa aggcacaaat      120
35 gttcaaaagc ttgaagtcaa aaacggcgtc gttaccgcca caatggcttc aagcaacgta      180
aacaacgaaa tcaaaggcaa aaaactctcc ctgtgggcca agcgtcaaga cggttcggta      240
aaatggttct gcggacagcc ggttaagcgc aacgacaccg ccaccaccaa cgacgacgtc      300
aaagccgaca ccgccgcaa cggcaagcag atcgacacca agcacctgcc gtcaacagca      360
tcgacaagaa aatcgacacc aaactag
40 <212> Type : DNA
<211> Length : 387
SequenceName : SEQ ID 627
SequenceDescription :

Sequence
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45 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
atgcccattc ccttttaaacc cgtattgggt gccgcgcgca tcgcccgaag gtttcccgc      60
50 tttgcccag accccgcgcc gcagtccgcc caaacgctga acgaaatcac cgttacccgc      120
acgcacaaaa cccaaaaact cggcgaagaa aaaatccgcc gcaaaaacttt agacaagctc      180
ttggtcaacg acgaacacga cctggtgctc tacgaccccg gcatttccgt cgtcgaaggc      240
ggcagggcgg gttctaaccg ctttaccata cgcggcgctg acaaagaccg cgtcgccatc      300
aacgttgacg ggctggcgca ggcggaaagc cgctcttccg aagccttcca agaattgttc      360
55 ggcgcgtacg gcaacttcaa cgccaaccgc aacacttccg agccggaaaa cttttccgaa      420
gtaaccatca ccaaaggcgc ggactcgctc aaatccggca gcggcgcatc gggcggcgca      480
gtcaattacc aaaccaaata cgcaagcgat tatgtttccg aagacaagcc ctaccatttg      540
gggataaagg gcggcagcgt cggcaaaaac agccaaaaat tcagcagcat caccgcgcgc      600
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60 aaaaaccgct cgaccgaggc cgatatcgaa attaaaaacg acggatatgt ctataacccg      720
accgatacag gcggaccacg caagtacctg acctatgtag ccacaggggt tgcgcgctcc      780
caacccgacc cgcaagaatg ggtaaacaaa agcaccctgt tcaagctggg ctacaacttc      840
aacgatcaaa accgtatcgg ctggattttt gaagactcgc gcaccgaccg ttttaccacac      900
gagctgtcta atttgtggac gggtagcacc acgtctgccc caacgggcga ctaccgccac      960
65 cgccaagacg tgagctaccg ccgccgctcc ggtgtcgaat acaaaaacga attggaacac      1020
ggcccgtggg acagccttaa gctgcgctac gacaagcagc gcacgatgat gaacacttgg      1080
acttgggaca tcccgaaaaa ttacgataaa agaggcatca acggcgagggt ttaccattcg      1140

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5      ttcgcgcata tccgccaaaa caccgcgcaa tggactgccc attttgaaaa acaactcgac 1200
      ttttccaaag ccgtttgggc ggcgcaatac ggcttgggcg ggcgcaaagg ggacaatgcc 1260
      aactcggatt acagctattt cgaaaacttg tacgacccca aaatcctcgc ttccaaccaa 1320
      gccaaaatca caatgctgat cgaaaaccgg tcgaaatata aatttgccca ttggaacaat 1380
10     gcgtttcact tggggcgcaa cgaccgcttc cgctgaatg cgggcatacg ctacgacaaa 1440
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      catttgggtt cggaacgcgc gcacgcgggc ttcagctacg gcacgggggt cgactggcgg 1560
      tttaccaagc atctgcactt gttggcaaaa tacagcaccc gcttccgcgc accgacttcg 1620
      gacgaaactt ggctactgtt cccacacccc gatttctacc tgaaagccaa cccaaacctg 1680
15     aaagccgaaa aagccaaaaa ctgggaattg ggtctggcgg gcacgggcaa agcgggcaac 1740
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      gtttcgctcag acgataaaaa caaccccaga tacgcccgcg tttcagacgg tacggcattg 1860
      gtcagctcgc ccgtttggca aaacccaaac cgctccgcgc cctgggtgaa aggcataagag 1920
      tttaacggca cgtggaacct cgacagtatc ggtttgccca aagggctgca caccggcctc 1980
20     aacgtcagct acatcaaggc caaggcaacg caaaacaacg gcaagaaaac gcccatcaac 2040
      gcgctttcgc cgtggacggc gggttacagc ctgggctatg acgcgccttc caaacgctgg 2100
      ggcatacaac cctacgccac gcgcaccgcc gccaaaaagc cgtccgacac cgtccacagc 2160
      aacgacgact tgaacaaccc gtggccttat gccaaacaca gcaaggccta tacgctgttc 2220
      gacctttccg cctacctcaa catcggcaaa cagggttacg tccgcgcgcg cgcgtaaac 2280
25     attaccaaca agcagtacta cacttgggaa tctttacgca gcacccgcga gttcggcagc 2340
      gtaaccgcgc ttgacaacaa aaccacgcc ggcatccaac gctttacctc gccgggcagg 2400
      agctacaatt tcaccatcga agcgaagttc taa 2433

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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2433

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25     SequenceName : SEQ ID 628
      SequenceDescription :

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Sequence

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30     <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
      <400> PreSequenceString :

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      atgaaaaaat ccctgattgc cctgactttg gcagcccttc ctgttgacgc aatggctgac 60
      gttaccctgt acggcaccat caaaaccggc gtagaaactt cccgctctgt agaacacaat 120
      ggaggctcagg tggttagcgt tgaaccgggt accggcatcg ttgatttggg ttcgaaaaatc 180
35     ggcttcaaaag gccaaagaaga cctcggtaac ggcctgaaag ccatttgga ggttgagcaa 240
      aaggcatcta tcgccggcac tgactccggt tggggcaacc gccaatcctt catcggcttg 300
      aaaggcggct tcggtaaatt gcgcgtcggc cgtttgaaca gcgtcctgaa agacaccggc 360
      gacatcaatc cttgggatag caaaagcgac tatttgggtg taaacaaaat tgccgaacct 420
      gaagcacgcc tcatttccgt acgctacgat tctcccgaat ttgccggcct cagcggcagc 480
40     gtacaatacg cgcttaacga caatgtaggc agacataaca gcgaatctta ccacgccggc 540
      ttcaactaca aaaacggcgg cttcttcgtg caatatggcg gtgcctataa aagacatcag 600
      gatgtggatg acgtgaagat tgagaaatac cagattcacc gtttggtcag cggttacgac 660
      aatgatgcc tatacgttc cgtagccgta cagcaacaag acgcgaaact ggttgaagac 720
45     aattcgcaca actctcaaac cgaagtggc gctacctgg cataccgctt cggcaacgta 780
      acgccccgcg tttcttacgc ccacggcttc aaaggctcgg ttgatgatgc aaaacgcgac 840
      aatacttacg accaagtggg tgctgggtgc gaatacgact tctccaaacg cacttctgcc 900
      ttgggtttctg ccggttggtt gcaagaaggc aaaggcgaaa acaaatcgt agcgactgcc 960
      ggcggtgtcg gtctgcgcca caaattctaa 990

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&lt;212&gt; Type : DNA

50 &lt;211&gt; Length : 990

SequenceName : SEQ ID 629

SequenceDescription :

Sequence

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55     <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
      <400> PreSequenceString :

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      atgaaaaccc tgctcctcct catccccctc gtcctcacag cctgcggcac actgaccggc 60
      ataccggccc acggcggcgg caaacgcttt gccgtcgaac aagaactcgt cgccgcatcg 120
60     tccgcgcgcg ccgtcaaaaga aatggacttg tccgccctga aaggacgcaa agccgccctt 180
      tacgtctccg ttatgggcga ccaagggttc ggcaacataa gcggcggacg ctactctatc 240
      gacgcactga tacgcggcgg ctaccacaac aaccccgaaa gtgccaccca atacagctac 300
      cccgcctacg acactaccgc caccacaaa tccgacgcgc tctccagcgt aaccacttcc 360
      acatcgcttt tgaacgcccc cgcccggccc ctgacgaaaa acagcggacg caaaggcgaa 420
65     cgctccgcgc gactgtccgt caacggcacg ggcgactacc gcaacgaaac cctgctcgcc 480
      aacccccgcg acgtttcctt cctgaccaac ctcatocaaa ccgtcttcta cctgcgcggc 540
      atcgaagtgc taccgcccga atacgccgac accgacgtat tcgtaaccgt cgacgtattc 600

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ggcaccgtcc gcagccgcac cgaactgcac ctctacaacg ccgaaaccct taaagcccaa 660
accaagctcg aatatttcgc cgttgaccgc gacagccgga aactgctgat tgcccoctaaa 720
accgccgcct acgaatccca ataccaagaa caatacgccc tctggatggg accttacagc 780
gtcgggcaaaa ccgtcaaagc ctcagaccgc ctgatggctg atttctccga catcaccccc 840
5   tacggcgaca caaccgcccc aaaccgtccc gacttcaaac aaaacaacgg taaaaaaccc 900
gatgtcggca acgaagtcac ccgccgcgcg aaaggaggat aa 942
<212> Type : DNA
<211> Length : 942
SequenceName : SEQ ID 630
10   SequenceDescription :

Sequence
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<213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
15   <400> PreSequenceString :
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atggcggtag aaagccaatg ccgtgcggaa ttgaacaaac gcagcgaatg cgttttgacc 180
gcgtgtggcg tgagtgcgga aaaacaggcg gaattgggaa acaagatttg cgttgcgctc 240
20   gcccaagaag caccacaacca gctgaccggc aacgatgtga tgcagatgct ggatccgtcc 300
acgcgcaatc aggcacttgc cgccctgacc gccaaaacgg tttccgcctg cttcaaacac 360
ctgtaccgct aa 372
<212> Type : DNA
<211> Length : 372
25   SequenceName : SEQ ID 631
SequenceDescription :

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30   <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
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aaccgcgtccg aagacggcgg cttcacgcaa aaccagattt tgagcgcgcc ttacggcttt 180
35   ggctgttcgg gcggcaatgc ttgcgccgcg ctgctgtgga aaaatccgcc cgccgggaca 240
aaaagtttcg tctgaccgt ttacgataaa gacgcgcgca ccggactggg ctggatgcac 300
tggttggtcg ccgacattcc cgccgatgtc cgccgccgca atgcgacctc gctgcaatta 360
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cagattttgc gcattcaggtt gacgccttcg tacacggcaa aaccgatgcc gtcagtgtgc 480
40   aaccacgcca acacgcgcga aagcgcgggc tccgccgcat tgtgcggcac ttcttcatcc 540
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<212> Type : DNA
<211> Length : 561
SequenceName : SEQ ID 632
45   SequenceDescription :

Sequence
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50   <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
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atgttttccc ataccggcgg gggggggggg gcgatggcgc aaaccgcgta atacgctatt 120
atcatgaacg agagaaacca gcccagggtg cagtggatg ggtcatattc aataaaggac 180
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55   ttcaacaata gcgatgagct tgtttctcga caaagcggtg ctgccgtttt tggcacagcc 300
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ggtgtcgtat gcagaagcgc cacagactgt cccaaacttg tctataaaac ccgattttcc 480
60   ttcgataatc ccgacttggc aaaaacagga ggcgggttgg ataagcacac agagccaagc 540
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65   ccgagcatcg atgtgcggac aagaaatacg gggactgccg gcattctatc ttattgggct 900
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gcaggccgct gcgtcaacaa agataacccc aataagaata ccaaaacctc ttccccgcga 1020

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15 tacgccttgg atttgaccaa agccgacgac aatgaccgca caaaagcctc tttgtttgat 1920
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35 tgccttctcg gaaaaggggt gcgcaccctg ctgatgaacg atttggacag cttggatatt 3060
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3114

SequenceName : SEQ ID 633

40 SequenceDescription :

Sequence

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45 &lt;213&gt; OrganismName : Neisseria meningitidis serogroup A strain Z2491

&lt;400&gt; PreSequenceString :

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gagcgcgtat ccatacaaaag tttggctgga gccaaaccaag atacgcacgc ctatcatatg 180
accagcggcg acattaaaaa aatccgcagt gcaaaactcg tcttgattaa cggcttagga 240
50 cttgaagctg ccgacatcca acgtgccgtc aaacagagca aagtatccta tgcggaagcg 300
accaaaaggc tccaaccctt caaagccgaa gaagaaggcg gacaccatca cgaccacgat 360
catgaccacg accatgacca cgaaggacac caccagacc acggcgaata tgacccac 420
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55 ctcaaaaaac tgcacagtga cgcacaagcc gcatttaatg ccgtccctgc cgccaaacgc 600
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cgcatgggtt accgcacgcg caaagaaacc ggtgtcaacg tcagcggcaa actgtattcc 840
60 gacgcactcg gcaacgcacc cgcagacacc tacatcgcca tgtaccgcca caacatcaaa 900
gccttaacca acgcatgaa gcaataa 927
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 927

SequenceName : SEQ ID 634

65 SequenceDescription :

Sequence

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<213> OrganismName : Streptococcus pyogenes strain MGAS8232
<400> PreSequenceString :
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   ctgactacag agcaaaaagc tgcacagaat caagtttcag cgttacaggg tcaagtaagt 180
   tcactacaat ctgaacaaga taaactgacc gcaagaaata cagaacttga ggcactttca 240
   aagcgatttg agcaagaaat taaggctcta acaagtcaaa ttgttgctcg taatgaaaaa 300
   ttaaaaaatc aagctcgtag tgcttataaa aacaatgaaa cttctgggta cattaatgca 360
10  cttttgaatt ctaaatcaat ttctgatgtt gtaaacctgt tagtagcaat taatagagct 420
   gtctctgcta acgttaaatt gttagaacaa caaaaagctg ataaagtttc ccttgaagaa 480
   aagcaagctg ctaaccaaac agctattaat accattgccc ctaatatggc aatggctgaa 540
   gaaaaccaaa atacattacg tactcaacaa gctaatttgg aagctgcaac tgcaaattta 600
   gctctccaat tagcatctgc tactgaagat aaagctaatt tggtagctca aaaagaagct 660
15  gcagaaaaag ctgctgctga agccttagca caagaacagg ctgctaaagt taaggcacaa 720
   gaacaggctg cacaacaagc agcatctgtt gaagcagcaa aatctgctat tactccagca 780
   ccacaagcta ctccggcagc gcaaagtagt aatgctattg aaccagctgc actcacggct 840
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   gttcaaaagt cctcaagtat tcgtgtgatg gactctaact acagtggtag acagtacatt 1140
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25  <212> Type : DNA
    <211> Length : 1197
        SequenceName : SEQ ID 635
        SequenceDescription :

30  Sequence
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    <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
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   agtgcctcga aactgtcaga agcccagtta actctagctt ggtttatgac 180
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40  accactcaag ggggggtcaac gcttgatcag caactcatta aactagccta tttttctact 420
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45  ccttaccttc atcctgaagc tgctcaaaat cgccgtaacg tcgtgttgca acagatgtac 720
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50  gattatgttt actatccaga ccaagatttc caagttgctt caacgattgt tgatgtgaca 1020
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60  aaaggaaaaa gtgccatgaa agaaaccacg gcctatatga tgacagatat gttgaaaaac 1620
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cattaa 2166
<212> Type : DNA
5 <211> Length : 2166
    SequenceName : SEQ ID 636
    SequenceDescription :

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10 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
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gtgacagcgc aggcacaaga gtggacacca cgatcgggta cagaatcaaa gtctgaactc 120
15 gtcctagttg ataatgtttt tacttatact gtaaaatacg gtgacacttt aagcacaatt 180
gctgaagcaa tgggaattga tgtgcatgtc ttaggagata ttaatcatat tgctaataatt 240
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20 acaccatctg atgtttccaac gacaccatta gcatctgcaa agccagatag ttttgtgaca 480
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25 gaagaaacct ctcagatgtt aactgcgcca gcggcacaaa aagctgtagc tgacaccaca 780
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30 catatggcag agcgtggtat ttcatacgtt atttggaac agcgattcta tgcgccattt 1080
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<211> Length : 1182
35 SequenceName : SEQ ID 637
    SequenceDescription :

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40 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
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gtttatgaat ttacaaaagg ggttatgggt aatgatggcg atgtttccat gcttatgaaa 180
45 gcaggaacgg aacctcatga ttttgagcct tctacaaaag acattaaaaa aatccaagat 240
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50 attacggctc ttgaaaatat tcgcgacagt ctttcaaaag cttaccaga aaaagcagag 540
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65 gttcaattca gtgacatgc cattgtcctt gaaaaagcag agcatttcca cctgtactgg 1440
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<212> Type : DNA  
<211> Length : 1548  
SequenceName : SEQ ID 638  
SequenceDescription :

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## Sequence

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&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

&lt;400&gt; PreSequenceString :

10	atgaaaaaat ttcacgtgtt tttggtctca ggagtaatcc ttttaggttt taatgggtcta	60
	gtacctacta tgccatctac acttatttctg caacaggaaa atcttggttca tgcagctgtt	120
	ttaggtcgata actatccgag taagtggaaa aaaggcaatg gaatcgattc gtggaacatg	180
	tatatccgcc aatgcacttc ttttgcagct tttcggttaa gctctgctaa tgggtttcag	240
	ttacataaag gctacggtaa tgcctgcacg tggggacata tcgegaaaaa tcagggttat	300
15	cctgtgaata agacaccaag cataggggct atcgcttggt ttgataaaaa cgcttatcag	360
	tcaaatgctg cttacgatca tgtagcatgg gtagctgata tccgtggaga cactgtcact	420
	atcgaagagt ataattacaa cgctggacaa ggcctgaaa gataccataa gcgtcaaatt	480
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	tcctacccaa gacaactaaa acacatttct caagcttcat ttgaccctc tggaaacttat	600
20	cactttacaa ccagattacc agtcaaagga caaaccagta tcgatagcc tgatcttgct	660
	tactatgaag caggtcaatc tgtttattac gataaagtcg tgactgctgg aggttatata	720
	tggcttagct acctcagttt ttctggaaac cgaogctata ttcccattaa agagcccgc	780
	cagctgtggt ttcaaaatga caatacaaaa ccttccatta aggtcgtgta tactgttacc	840
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25	gccggaggag acccaactcc actaaactgg attgatccca caccattaga tgaaacagat	960
	aaccaaggaa aagtttttagg aaatcaaat ctccgtgtgg gtgaatattt tacogtcact	1020
	ggtagttata aagtattaaa aattgatcaa ccaagtaatg gtatttatgt tcaaatcgga	1080
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&lt;212&gt; Type : DNA

30

&lt;211&gt; Length : 1125

SequenceName : SEQ ID 639

SequenceDescription :

## Sequence

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&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

&lt;400&gt; PreSequenceString :

35	atgttaaaat ttacttcaaa tattttagct actagtgtag ctgaaacaac tcaagttgct	60
	cctggaggct gctgttgctg ctgtactact tgttgcttct caattgctac tggaagtgg	120
40	aattctcaag gtggtagcgg aagtatacgc ccaggtaaat aa	162

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 162

SequenceName : SEQ ID 640

SequenceDescription :

45

## Sequence

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&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

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<212> Type : DNA

<211> Length : 1488

10 SequenceName : SEQ ID 641

SequenceDescription :

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<212> Type : DNA

<211> Length : 921

35 SequenceName : SEQ ID 642

SequenceDescription :

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<212> Type : DNA  
<211> Length : 4944  
60 SequenceName : SEQ ID 643  
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65 <213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols  
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25 <211> Length : 1392
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5 <212> Type : DNA  
 <211> Length : 2277  
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 SequenceDescription :

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<213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols  
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45 <212> Type : DNA  
 <211> Length : 1797  
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 SequenceDescription :

## 50 Sequence

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<213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols  
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 1797

20 SequenceName : SEQ ID 647

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25 &lt;213&gt; OrganismName : SARS coronavirus Frankfurt 1

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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

25 SequenceName : SEQ ID 648

SequenceDescription :

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Sequence
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

35 SequenceName : SEQ ID 650

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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

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40  SequenceName : SEQ ID 651
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&lt;212&gt; Type : DNA

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45      SequenceName : SEQ ID 652  
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50      &lt;213&gt; OrganismName : SARS coronavirus Urbani

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<212> Type : DNA

<211> Length : 3768

50 SequenceName : SEQ ID 653

SequenceDescription :

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55 <213> OrganismName : SARS coronavirus

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SequenceDescription :  
  
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SequenceDescription :  
  
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   gctaccgcct ttaaactgac ctcacgtctt atcaccaaca cattaacca gttggatacc      300
   tcaggttcca cactgaatgt gggcgtggat tataacggcg cggcagtcga aaaaactggc      360
10  gataccgtga tgatcgatac cgccaacggc gtactgggcg gcaaccttag cccgctggca      420
   aacggttaca atgccagcaa tcgtaccacc gcacaggatg gtttcaactt ctccatcatc      480
   agcggcacca ccaatggtag caccgcagta accgattaca gcactctacc ggaaggcatc      540
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      SequenceName : SEQ ID 666
      SequenceDescription :

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20  <213> OrganismName : Escherichia coli O157:H7
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25  gaggaaggcc agaaagggtt tataggctgg tttgaaagcg gcgatgtccg ggccataaaa      180
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45  gaggaaggcc agaaagggtt tataggctgg tttgaaagcg gcgatgtccg ggccataaaa      180
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65  ctctgctgta ccacgaatcg ttcggcaagc aacctttggg aaagcccggc gactatacag      180
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2148

SequenceName : SEQ ID 669

35 SequenceDescription :

Sequence

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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 642

SequenceName : SEQ ID 670

55 SequenceDescription :

Sequence

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<213> OrganismName : Escherichia coli O157:H7  
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<212> Type : DNA  
 <211> Length : 372  
 SequenceName : SEQ ID 671  
 SequenceDescription :

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Sequence  
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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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<212> Type : DNA  
 <211> Length : 753

25 SequenceName : SEQ ID 672  
 SequenceDescription :

Sequence  
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30 <213> OrganismName : Escherichia coli O157:H7

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<212> Type : DNA  
 <211> Length : 753

SequenceName : SEQ ID 673  
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50 Sequence  
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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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	gtaaatggtc tgaacttcgc ggtgcagtat caaggtaaca acgaagggtgc cagtaatggt	180
	caggaaggca ccaacaacgg acgtgatggt cgccatgaaa acggtgacgg ctggggctctt	240
	tccacaacat atgatttagg catgggcttt agcgtgtgtg cggcat.acac ctcttctgac	300
	cgcaccaatg accagggttaa ccatactgcg gcgggtgtgtg ataaag.caga cgcgtggact	360
60	gctgggctaa aatacagatgc taacaatatt tacctggcaa ccattg.attc agaaacgcgt	420
	aatatgaccc cgtttggcga cagcatttat gctgttgcaa acaaaa.ccca gaactttgaa	480
	gtcactgcac agtaccagtt tgattttggt ctgcgtcccg cagtct.cttt cctgatgtct	540
	aaaggccgtg acctgcacgc tgccggtggt gcagacaacc cggcaggtgt tgatgataaa	600
	gatctgggtta aatacgcgca tgttggcgcg acttactatt tcaata.aaaa catgtccact	660
65	tatgttgact ataaatcaa cctgttggat gaagatgaca gtttct.acgc tgccaacggc	720
	atctctaccg atgatattgt cgcttttaggt ctgggtttatc agttct.aa	768

<212> Type : DNA

<211> Length : 768  
 SequenceName : SEQ ID 674  
 SequenceDescription :

5 Sequence  
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<213> OrganismName : Haemophilus influenzae Rd

<400> PreSequenceString :

10	atgggggttta ttatgaaact aactaaaaca gcattatgta ctgcactttt tgccaccttt	60
	acttttttcag cgaacgcaca aacttatcct gatttgccag tggggatcaa aggaggaaca	120
	ggcgcatata ttggcgacac agtttatgtg ggattaggtt ctgggtggcga taaattctat	180
	accttagacc taaaagatcc ttcagcaca tggaagaaa ttgctacatt tccgggtggc	240
	gaacgcaatc aacctgttgc agcgcagtg gatggaagac aaaaagatga aatcgagca	300
	caaaaaaatg aaaaaggcga acttcaactc gttaatgacg cttatcgcta taaccaagc	360
15	gataatactt ggaatgaaact tctactcgt tctccccgtg gtttagtagg atcaagtggg	420
	gcattctcag gagataaagt ttatatctta ggcggctcta atctctctat atttaattggc	480
	ttcttccaag acactgtggc agcaggtgaa gataaagcga aaaaagatga aatcgagca	540
	gcttatttcg atcaacgtcc agaagattat ttctttacaa cagaattatt gagctatgaa	600
	ccatcaacca ataaatggcg caatgaaggt cgtattccat tctctggctg tgctgggtgca	660
20	gcctttacaa ttcaaggtaa tgagctagt gttgtcaatg gcgaaattaa acctggactt	720
	cgcaccgctg aaacccatca aggtaaattc actgtctaaa gtgtgcaatg gaaaaactta	780
	cctgacttac ctgtctcaaa aggcacaaat caagatgggt tagctgggtg gctttcaggc	840
	tatagtaacg gtcattatct agtcactggc ggcgcaaat ttccagggtc aatcaaacaa	900
	ttcaagaag gaaaacttca cgcacataaa ggtttaagca aagcttggca taacgaagtt	960
25	tatacggtga ataattgtaa atggcgcat gttggggaat taccaatgaa tattgggtat	1020
	gggtttttctg tatcttcaaa caataaagtt ttactgattg gcggtgaaac tgatggaggt	1080
	aaggcttttaa ctacggtcaa agcaataagc tatgacggtg aaaaattaac catcgaataa	1140

<212> Type : DNA

30 <211> Length : 1140

SequenceName : SEQ ID 675

SequenceDescription :

35 Sequence  
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<213> OrganismName : Haemophilus influenzae Rd

<400> PreSequenceString :

40	atggggagaac aatatatgct tacgacgata ctcagcttcc tcattgtaac cactgtgggt	60
	gcgtatgttt cttgggttaa aacaaaaggg gatgatttaa aatcttcaaa aggggtattt	120
	ttggcagggc gtgggttaag cgggttagta attggctgct caatgggtgct gacatcgctt	180
	tcaactgaac aacttatcgg tgtcaatgcg gtgtcctata aaggtaattt ttccgtgatt	240
	gcttggacag ttccaacggt tattccgctt tgtttcttgg ctctttatat aattggctgg	300
	ctataa	306

<212> Type : DNA

45 <211> Length : 306

SequenceName : SEQ ID 676

SequenceDescription :

50 Sequence  
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<213> OrganismName : [Helicobacter pylori, strain J99

<400> PreSequenceString :

55	atgaaaaatc aacacaaaaa tcccctaaca aaagctttta tgaaaaactta tccatataac	60
	cattttttat ttttctgctt tattctagga gcgtttttat taggtttgct cagtccagct	120
	tatgctttta gtattatcac cactaaagaa attgacgcta atttgcttaa tggagcgata	180
	gaaagcaggg tgggtgttag caagaggggtg tttaaagtag aagctcatgg gttttatatt	240
	agaaacaatg cgactaacag catagatata gaaatcacca gtcttttaag agacaatcaa	300
	tcgtttcctt tgactagcag tgctaaaacc agtttaaaaa tacctcctaa cgccaagatt	360
	aaaaaatcca ctatccttgt tttgaaaggc gagaacgctg aagaagtggc taagatttta	420
60	ggcggttagca aagaagaata ccaaaagcta gaaaacatcg ctcaaaccaa agcggcta	480
	gaccctatgt atgctaacac gccttttagt aatggttctg atagttcctt ttacgataac	540
	aatcctaata gccctagcaa taacgctatc aatggcaag atggcgcaaa tgggagtaac	600
	ggctatgggg caaatggcaa tgatggggta aatgggatca gtgggagtaa tgggtgcaaat	660
	gggagtcatt caaataataa tgcaataggc agtggatttg atacagatgg cgtgttaggg	720
65	gtggatgggg tgaatggcto tagttcttca agtggcgct ctgtaggggg ttatgagaat	780
	aatttcacta atcatggctc tactaacaat aacacaggag ggtatgacaa ttttaataat	840
	ggcagctcaa gtgggtgggag tttaggggaat ggggggcttt tccctattcc ttttggtaat	900

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5   ggagacacaa acaattccaa taattccact aacaccacta gcccactaa tggcagtagt   960
    tctaataacg ccactaatcc tagttcgcaa gaaaacaatt actccagcca gtattgtaaa   1020
    gtgccagagt taagcccaaa caacacgatg aaactagatg ttatcgctaa agatggctct   1080
    tgtatttcta tgaacgcttt aagagatgac actaatgctg cttatagata cgattttgaa   1140
    gccggtaaag ccataacgca aacgcaatac tactatgtag atagggaaaa taaaacgcaa   1200
    aatatcggtg gtttgtgtgga tttacaaggc gctcaatacg ccatgcaact ttacaaagat   1260
    gacagcaaat gcgccttaca aaccacgagc gataaagggt atgggtatggg gaaaacgcaa   1320
    accttttcaa ctgaaatcgt gtttcgtggg atggacaatt taatccatgt cgctgtgcct   1380
    tgcagcgatt atgcaagggt gcaagacagg attgttaggt atgaaaaaaa tgataaaacc   1440
10  caaaccttaa cgcttatagt ggatcagtat tataatgata ctaacaaccc taacaagcaa   1500
    gagattttta atcgtgggat tgccacccaa ttaagctcgc aatatcaaga atttgcattgc   1560
    ggtcaatggg aatacaatga cgctaaatta gaagccaaaa gacctacaat gctaaaaaagc   1620
    tataacaagc ttaatggaga atgggtagaa gttacgcctt gtaattttga agcagggatt   1680
    aaaagcggtg cgggtgttag cccttatgtg atgggcgtgc ctagtcttaa agtcttaagc   1740
15  gatattacta caagccatta ttttaggata gaaaggaaaa attatggtga gagagaacaa   1800
    gcccaaaaac tttatggagt caatcggtgc caaccgcaat attccatact gatcctagta   1860
    tcaccgattg gagcgccact taaaaacca ctaccacca aaccactcaa ccttatttac   1920
    gcccgccca agataatgaa aaacacccca caacctataa tcttatcacc actcaaacca   1980
    ccatcaacag gactcaaagc gttttga                                     2007
20  <212> Type : DNA
    <211> Length : 2007
        SequenceName : SEQ ID 677
        SequenceDescription :

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25  Sequence
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    <213> OrganismName : Helicobacter pylori, strain J99
    <400> PreSequenceString :
30  atgcctgtta taagagtttt agtaatgctt gcaacaatga tgatgaaatt agtaaaaaacg   60
    gcaaaagaaa agaaagtttt taagaatgtg ggaatatcta taatggggat tgcttttttg   120
    gaagcgataa aagactcgat aaaaaaacia attaaaaaaa gcgattggat atgcggggaat   180
    gttaaagactg cggtatgatta tttaaaaacg catcctaact catggtttta ttcagcaata   240
    ggtgtaacag cgataacagc catgcttatg aatgtgtgtt ttgctgatga ccaatccaaa   300
    aaagaagtgg ctcaagctca aaaggaaagt gaaaacgcta gggatagagc gaacaagagt   360
35  gggatagaac tggaacaaga agagcaaaag acagaacaag aaaaaaaaaa gacagaacaa   420
    gaaaaacaaa agacagaaca agaaaaacaa aagacagaac aagaaaaaca aaagacagaa   480
    caagaaaaac aaaagacaag caatatagag actaacaatc aaataaaagt agaacaagaa   540
    caacaaaaga cagaacagga aaaacaaaag acaacaataa cgcaaaaaga tttgggttaac   600
    aaagcagaac aaaattgcca agaaaatcat aatcaattct ttattaaaaa attaggaatt   660
40  aaggctggca ttgctataga aatagaagct gaatgcataa ccctaaaacc caaaaaaac   720
    aatcaaaccc ctatccagcc aaaacacctc ccaaactcca aacaacccca tcttcaaaga   780
    ggatcaaaaag cgcaagagct tatcgcttat ttgcaaaaag agctagaatc tctgccctat   840
    tcacaaaaag ctatcgctaa acaagtggat ttttataggc caagtcttat cgcttattta   900
    gaactagatc ctagagattt taacgctaca gaagaatggc aaaaagaaaa tttaaaaata   960
45  cgctctaaag ctcaagctaa aatgcttgaa atgaggagtt taaaaccaga ccacaaagcc   1020
    caccttcaa cctctcaaag ccttttgctc gttcaaaaaa tatttgctga tgttagtaaa   1080
    gaaataaaag tagttgctaa taccgagaaa aaagtagaaa aagcgggtta tggttatagt   1140
    aaaaggatgt ag                                     1152
50  <212> Type : DNA
    <211> Length : 1152
        SequenceName : SEQ ID 678
        SequenceDescription :

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55  Sequence
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    <213> OrganismName : Helicobacter pylori, strain J99
    <400> PreSequenceString :
60  atgaactacc ctaatctacc taacagcgct ttagagataa gcgaacagcc agaagtgaag   60
    gaaatcacta acgagctttt aaagcaatta caaacgctt taaggagcaa cgcgcatttt   120
    agcgagcaag tgaatttaag ccttaaatgc atcgttagga ttttagaagt gcttttgagt   180
    ttggattttt ttaagaatgc gaatgagatt gatagcagtt taagaaattc cattgagtgg   240
    ctgactaacg ccggcgagag cttgaaatta aaaatgaaag aatacgagcg ctttttttagc   300
    gagtttaata cgagcatgca tgccaacgag caggaaagtaa ccaatacctt aaacgctaac   360
    gccgagaaca ttaaaagcga aattaaaaag ctagaaaatc aattgataga aaccacgaca   420
65  agacttttaa cgagctatca aatcttttta aacgaagcca gagataacgc taacaacca   480
    atcacaaaaa acaaacacca aagccttgaa gcgattacac aagctaaaaa caacgctaatt   540
    aatgaaataa gcaacaatca aacgcaagcg ataactaata tcaccgaagc gaaaacgaac   600

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gctaataatg aaataagcaa caatcaaacg caagcgataa ctaacattaa cgaagccaaa 660
gaaagcgcta caacgcaaat aaacgccaat aagcaagaag caataataaa catcacgcaa 720
gaaaaaaccc aagccacaag cgagatcacc gaagcgaaaa agaccgatca ttatcaaaac 780
attgatTTTT ttgagtttga ataa 804
5 <212> Type : DNA
  <211> Length : 804
    SequenceName : SEQ ID 679
    SequenceDescription :

10 Sequence
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  <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
15 gtgaattttt..tttcaaagga tttgttttaa aaagtaactc ctttattttt..aagcgtttat 60
   tttttaagcc ccacccttac gcaagccaaa agcgcgtttt atgtggcttc tcaataccag 120
   gtggggaaaa tgatcatgaa aaaatacaac gatctcaaac gcacgattga aggggcgagc 180
   tttcttttag gctgggggat taaccocact aattactggg ttatttcgcg ctattacttt 240
   tttatggatt acgggaatgt cattctcaat aaaagaacgg gcgctcaagc gaacatgttc 300
   acttacggct ttggagggga tttgatcatg gaatacaata aaaacccttt gtatgtat tt 360
20 tctctttttt atggcatgca agttgctgaa aacacatgga cgatttccaa acacagcgcg 420
   aatttcatca ttgacgactg gcgcagcatt caagggtttt cgctcaaaac ttcaaatttc 480
   aggatgttgg gtttagtggg gtttaaattc caaacctgtc tattccacca tgacgctagt 540
   attgaagtgg ggatcaaatg gccttttgct tttgaatacg actcaccctt tgtaaggcct 600
   tttctgtctt ttatttcgca cactttctac ctttaa 636
25 <212> Type : DNA
  <211> Length : 636
    SequenceName : SEQ ID 680
    SequenceDescription :

30 Sequence
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  <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
35 atgaaaaaat ttaccctatc gctatttttg tgttgacact tacttaacgc tgaagaggat 60
   atttttagga acaacacaaa tgaaactgat cttacaaatt cttttgaaca tggcaaaagaa 120
   aacaacaatc ttatccagc aaaatccgat agtttagaaa gtttcaaaga acaagaaaac 180
   aaagaaaaag ccaaacagct tatggattta aaggccttac agagcgtgta tttttctaaa 240
   aatagaaaaat tgcaagacaa taatttcaat gtcttgtatg tggcaggcaa caccaacaaa 300
   atccgcttac gctatgcgat gactaccacc tttatttttg ataatgatcc tattatctat 360
40 ttgagtttag gagatcctag cgattttgaa ctacttacc ccactaatga tcattacgat 420
   ttgtctaaca tgctagtgat taagccgtta cttatagggg tggatacgaa cctaaccgta 480
   gtccggagcga gcggcacaaat ttatacctta ttatttgttt ag 522
  <212> Type : DNA
  <211> Length : 522
    SequenceName : SEQ ID 681
    SequenceDescription :

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50 <213> OrganismName : Mycoplasma pneumoniae
  <400> PreSequenceString :
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   agcaacagta gtacgagtgg ggtaacgacc cagggacaat cccaaaatgc atccagtaac 120
   gaaccgcac cgacgttttc gaatgtcggc gttggtctca aagccaatgt caacggcacc 180
55 ttaagtgggt cgcaactac gcctaatacag caaggcactc cctgggttaac cctcgaccaa 240
   gccaacctcc agctctgaac gggcgcgggg tgaaggaatg ataagaacgg acaaagtgc 300
   gaaaactaca ccaatttcgc gagtgcctaag ggcagtacga accagcaggg ttcaacaa cg 360
   ggtggatcag cgggcaaccc cgactcggtt aagcaggata aggctgataa aagtgggtgat 420
   tcggtaacgg ttgcagaagc cacatcgggc gacaacttga cgaattacac caacctccc 480
60 ccaacatcac cccacatcc gactgaccga acgcgctgtc attcaccaac aagaacaa cg 540
   cccacgggt gcagctgttc ctgcgcggcc tgttgggcag catcccgggt ttggtcaata 600
   agagtgggca agatgataac agtaagttta attccaccga ccaaaaatgg tcttacac cg 660
   aattaa 666
  <212> Type : DNA
65 <211> Length : 666
    SequenceName : SEQ ID 682
    SequenceDescription :

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## Sequence

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<213> OrganismName : Mycoplasma pneumoniae  
 5 <400> PreSequenceString :  
 gtggatgata taaccgcgcc tcaaaccagc gcggggctcgt ccagcggaac tagtacgaac 60  
 acaagtgggt cgcgttcctt tctcccgacg ttttcgaatg tcggcggttg cctcaaagcg 120  
 aatgtccagg gcacctcgg gggcagacag acgacgacta cggggaacaa tattcccaa 180  
 tgagccaccc tcgaccaagc caacctccag ctctgaacgg gggcgggggtg aaggatgat 240  
 10 aagactacaa gtggttcaac cggcaatgcc aatgacacca agttcacgag tgctacgggc 300  
 agtgggagtg ggcagggcag ttcttcaggt acaaatactt ccgcggggaa tcctgatggg 360  
 cttcaggctg ataaagttga tcaaaacggt caggtgaaaa caagcgttca agaagccact 420  
 tcaggggaca acttgacgaa ttacaccaac ctcccccccg ccaacctcac cccaccgct 480  
 gattgaccga acgcgctgtc attcaccaac aagaacaacg .cgacgcgcgc ccagctgttc 540  
 15 ctgcgcggcc tgttggggcag catcccggtg ttggttaata agtccggcca agatgataac 600  
 agtaagttta aggcggagga ccaaaaatgg tcctacaccg acttacagtc ggaccaaacc 660  
 aaactgaacc tccccgctta cggcgagggtg aatgggttgt tgaatccggc gttggtggaa 720  
 acctattttg ggaacacgcg agcgagtggg tcgggggtcca acacgaccag ttcacccggt 780  
 atcggtttta aaattcccga acaaagtggc acaaacacaa cgtcgaaggc tgtgctgac 840  
 20 accccgggtg tgtgggattt gccgcaagac gtgtgtaaca tcgttgctcag tggcaccagc 900  
 ttcagcttcc agctcggcgg gtggttagtt acgttcacgg actttatcaa accccgcgct 960  
 gggtacctcg ggctccagtt aacgggtctc gatgtaagtg aagcgaccca aaggaggtta 1020  
 atttgggcca agcggccctg agcggccttt cgtggcagtt gggcgaaccg gctgggccc 1080  
 gtggaagtg tgtgggattt caagggggtg tggcgggatc aagctcagtt ggccgcgcaa 1140  
 25 gcagctacaa gtagtaccac caccacgcga acaggggcta ccttacggga gcaccgaaat 1200  
 gccctcgcgt accaaattag ctataccgac aaggattcgt acaaggcttc cactcaaggt 1260  
 tcgggtcaaa ccaattccca aaacaattcg ccctacctcc attttattaa acctaaagaa 1320  
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 cgcaccaagc tgcgcctaaag ctttggtaga gaccattcca cccagcccca gcccgaatcg 1440  
 30 ctcaaaacaa cgacaccggg atttgggagg agtagtggtg acctcagtag tgtgtttagt 1500  
 ggtgggggtg ctggaggggg ttcttcaggc tcaggtcaat ctggcggtga tctctcccc 1560  
 gttgaacggg tgagtgggtc ctaa 1584  
 <212> Type : DNA  
 <211> Length : 1584  
 35 SequenceName : SEQ ID 683  
 SequenceDescription :

## Sequence

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40 <213> OrganismName : Mycoplasma pneumoniae  
 <400> PreSequenceString :  
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 ttcaacctcg cgggggtcggg gctcgaccag gtggtggatt atgtgccctg gattgggaat 120  
 gggcacaggt atgggaataa ccaccggggc gtggatgata taaccgcgc taaaaccggc 180  
 45 gcggggctcgt ccagcggaac tagtacgaac acaagtgggt cgcgttcctt tctcccgacg 240  
 ttctcgaatg tcggcggttg cctcaaagcg aatgtccagg gcacctggg tggcagtcag 300  
 acgacgacta cggggaaga tattcccaa tgaccacccc tcgacccagc caacctccag 360  
 ctctgaacgg gggcgggtg aaggatgat aaggcttcaa acaacaaag tgacgaaaac 420  
 cacaccacct ttaaaagcgc tacgggcagt ggccagcagg gtggtttctac aacgggtggg 480  
 50 tcagcgggca atcccgactc gttaaagcag gataagatta gtaaatcagg tcagaactta 540  
 accacgcagg acggcgcgcc ccagctaat tcgacgacgg aatccgcgct gaattatgat 600  
 cactcccccc ccaacctcac cccacatcc gattgaccga acgcgctgtc attcaccaac 660  
 aagaacaacg cgcagcgcgc ccagctcttc ctccgcggct tgttggggcag catcccggtg 720  
 ttggtgaatc gaagtgggtc agatgattcc acaaatcc aagccaccga ccaaaaatgg 780  
 55 tcttacaccg acttaaagtc ggacaaacc aagctcaacc tccccgctta tgggtgaagt 840  
 aatgggttgt tgaatccggg gttggtggaa acctatttg ggacgacgcg agcgggtggg 900  
 tcgggggtcca acacgaccag ttcacccggg atcggtttta aaattcccga acaaaataat 960  
 gattcgaagg ctgtgctgat cacccccggg ttggcttgaa cgcgcgaaga cgttggtaac 1020  
 ctcggtgtca gtggtaccag cttgagcttc cagttgggcg ggtggctggt caccttcacg 1080  
 60 gactttgtca aaccccgccg gggttacctc gggctccagt taacgggctt ggatgcaagt 1140  
 gatcgacgcg agcgcgcct catttgggccc aagcggccct gagcggcctt tcgtggcagt 1200  
 tgggtcaacc gcttggggcg ggtcgagagt gtgtgggatt taaagggggg gtgacaagat 1260  
 caagctcagg cggcgcgcga agcagctacc accgcgcgcg caacagggga cgccttaccg 1320  
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 65 tccactcaaa gctccgggtc aaccaattcc caaacacct cccctacct ccatgtgatt 1440  
 aaacctaaag aagtcgaaaa cagaccccaa ctgcaccagg gcttaaaaac ctggtggacc 1500  
 ccaaccaggt tcgcaccaag ctgcgcaaaa gctttggtac agaccattcc acccaagcca 1560

	aaccccaatc	cctcaaaaaca	accacacccg	tgtttgggac	gaatagtgg	aacattggca	1620
	gtgtgcttag	tgggtggggg	gctggaggag	cagacagcac	caattcggg	gacctctccc	1680
	ccgttgaacg	ggtgagtg	tgggttgg	ggcaattacc	cagtggggg	ggggggaata	1740
	gtagtggag	tattaaaagt	gtgcaagaca	ctcctattta	tatctatatt	cattagtata	1800
5	ttcttttttaa	attgttcct	cactttattc	atatgaacca	ccgcctccct	cgcgacggga	1860
	ctcacccgtag	tgggacactt	cacaagtacc	accacgacgc	tcaagcgcca	gcaatttagc	1920
	tacacccgcc	ctgacgaggt	cgcgctgcgc	cacaccaatg	ccatcaaccc	gcgcttaacc	1980
	ccgtgaacgt	atcgtaacac	gagcttttcg	tccctccccc	tcacgggtga	aaaccccg	2040
	gcgtgggcct	tagtgcgca	caacacccgc	aagggcac	ctgcggcgag	tggcagtc	2100
10	caaaccacgt	atgatccac	ccgaaccgaa	gcggcttga	ccaccgccac	cacctttgtg	2160
	ttacgccgat	acgacctcgc	cgggcgttgt	acgacctcga	cttttcgaag	ttaa	2214

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2214

15 SequenceName : SEQ ID 684

SequenceDescription :

Sequence

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20 &lt;213&gt; OrganismName : Mycoplasma pneumoniae

&lt;400&gt; PreSequenceString :

	gtgttggtg	atattccctg	gattgggaat	gggcacagat	atgggaatga	ccaccgggg	60
	agcaacagta	gtacgagtgg	ggtaacaacc	cagggacaac	aatcgcaaaa	tgcacccgga	120
	accgaacccg	catccacttt	ttcgaatgtc	ggcgttggcc	tcaaagcgaa	tgtccagggc	180
25	acctgggggt	gcagtcagac	gacgactacg	gggaaagata	ttcctaaatg	acccaccctc	240
	gaccaagcca	acctccagct	ctgaacgggg	gcggggtggc	ggaatgataa	ggcttcaagt	300
	ggcaaaagt	acgaaaacca	caccaagttc	acgagcgcta	cgggcagtg	gcagcagggc	360
	agttcttcag	gtacaactaa	ttccgcgggc	aatcccgact	cgtaaagca	ggataaggtt	420
	gataaaagt	gtgattcgg	aacggttgca	gaaaccactt	caggggacaa	cttgacgaat	480
30	tacaccaacc	tccctcccaa	cctcaccccc	accgctgatt	gaccgaacgc	gctgtcattc	540
	accaacaaga	acaacgcgca	gcgcgcccag	ctcttccctc	gcgcctgtt	gggcagcatc	600
	ccggtgttgg	tgaataagag	tgccaagat	gattccaaca	agttccaagc	caccgaccaa	660
	aaatgggtctt	acaccgaatt	aaagtccggat	caaaccgaag	tcaacctccc	cgcttacggg	720
	gaggtgaatg	ggttgttgaa	tccggcgttg	gtggaggtgt	acggctctgag	ttccactcaa	780
35	ggttctagca	ccggagccgg	tggcgttgga	ggtaacaccg	gaggcgacac	caataccca	840
	acttatgcac	gaccgggaat	cggctttaa	ttaccctcca	cggactcgga	atcttccaaa	900
	gccaccctga	tcacccccc	gttggttga	acagcgcaag	atgtcggtaa	cctcggtgtc	960
	agtgttacca	gcttgagctt	ccagctcggc	gggtggttgg	ttaccttcac	ggattttatc	1020
	aaaccccggt	cgggttacct	cgggctccag	ttaacgggct	tggatgcaaa	tgacagcgac	1080
40	caaagggagt	taattttgag	ccccccggcc	ctgaaccgcc	tttcgtggca	gttgggtcaa	1140
	ccgcttgggc	cgcgttgaga	gtgtgtggga	tttcaagggg	gtgtggggcg	atcaagctcg	1200
	gtccgactcg	caagcagcta	caagtaccac	caccgcaacg	aaggctacct	tatcgagca	1260
	caccaatgct	ttggccttct	aggtgagtta	taccgaccag	gattcgta	aggcttccac	1320
	tcaaagctcc	ggccaaaacc	aaaacacctc	cccctacctg	cacttggtgc	aggggaaaaa	1380
45	agtaggttcc	tctgataa					1398

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 1398

SequenceName : SEQ ID 685

SequenceDescription :

50 Sequence

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55 &lt;213&gt; OrganismName : Mycoplasma pneumoniae

&lt;400&gt; PreSequenceString :

	ttgttgggca	gcatcccgg	gttggtgaat	cgaagtgggt	ccgattccaa	caaattccaa	60
	gccaccgacc	aaaaatgg	ctacaccgac	ttacagtcgg	accaaaccaa	actgaacctc	120
	tccgcttacg	gtgaggtgaa	tgggttgg	aatccggctt	tggtagaaac	ctattttggg	180
	acgacgcgta	cgtctagcac	tgcgaaccaa	aacagtacaa	ccgtccccgg	tatcggtttt	240
	aaaattcccc	aacaaaataa	tgattccaaa	gccaccctga	tcacccccgg	gttggcttga	300
60	acgccccagg	acgtcggtaa	cctcggtgtc	agtggcacca	cgggtgagctt	ccagctcggc	360
	gggtgggtgg	tcaccttcac	ggactttgtc	aaaccccgcg	cgggttacct	cgggctccag	420
	ttaagtggcc	tgaatgccag	tgacagcgac	caaagggagt	taatttgggc	ccccccggcc	480
	tgagcggcct	ttcgtggcag	ttgggtcaac	cgggttggcc	gcgtggagag	tgtgtgggat	540
	ttgaaggggg	tgtgggcgga	tcaagctcag	ttggccgcgc	aagcagctac	aagtagtacc	600
65	accaccacg	caacagggc	taccttaccg	gagcaccoga	atgctttggc	gtaccaaat	660
	agctataccg	acaaggattc	gtacaaggct	tccactcaag	gttcgggtca	aaccaattcc	720
	caaaacaatt	cgctctacct	ccatttgatt	aaacctaa	aagtcgaaag	cacgacccaa	780

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ctcgaccagg gcttaaaaaa cctgttggac cccaaccagg ttcgaccaa gctgcgccaa      840
agcttttgta cagaccattc caccagccc cagcccaat cgctcaaac aacgacaccg      900
gtgtttggag ccatgagtgg taacctcgcc agtgtgctta gtggtggggg tgctggagga      960
gcaggcagca ccaattcggg ggacctctcc cccgttgaac ggggtagtgg gtcactaacc     1020
5  attaatagga atttttctta ttaa                                     1044
   <212> Type : DNA
   <211> Length : 1044
       SequenceName : SEQ ID 686
       SequenceDescription :

10  Sequence
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    <400> PreSequenceString :
15  atggggccagc agggacaatc aggtacctcc gcgggggaatc cagactcgtt aaagcaggat      60
    aagattagta agagtgggga tagtttaacc acgcaggacg gcaatgacgac cggtaacaa      120
    gagggcacta actacaccaa cctccccccc aacctcaccg ccaccgctga ttgaccgaac      180
    gcgctgtcat tcaccaacaa gaacaacgag catcgcgccc agctcttctt tcgcggttg      240
    ttgggcagca tcccgggtgtt ggtgaatcga agtgggtccg attccaacaa attccaagcc      300
20  accgacaaaa aatggtccta caccgactta cagtcggatc aaaccaagct gaacctcccc      360
    gcttacgggtg aggtgaatgg gttgttgaat ccggcggttg tggaaacctt ttttgggaac      420
    acgcgagcgg gtggttcggg gtccaacacg accagttcac ccggtatcgg ttttaaaatt      480
    cccgaacaaa ataatgattc caaagccacc ctgatcaccg ccgggttggt ttgaacgccc      540
    caggacgtcg gtaacctcgt tgtcagtggc accagcttga gcttcagct cggcggttg      600
25  ctgggtcagct tcacggactt tatcaaaccc cgcgcgggtt atttgggcct ccagttaagt      660
    ggcctgggatg ccagtgcagc cgaccaaaag gagttaattt gggccaagcg gccctgagcg      720
    gcctttcgtg gcagttgggt caaccggctg ggcgcgctgg agagtgtgtg ggatttaaag      780
    ggggtgttgg cggatcaagc tcagttggcc gcgcaagcag ctacaagtga agcttcggg      840
    tcagcttttg cacctcaccg gaatgctttg gcgtttcagg tgagtgtggt ggaagcgagt      900
30  gcttacagct cttcaacctc aagttcgggt tccgggtcaa gttcaaacac ctccccctac      960
    ctccatttga ttaaacctaa gaaagtcgaa agcacgaccc aactcgacca gggcttaaaa     1020
    aacctgttgg accccaacca ggttcgcacc aagcttcgac aaagcttttg tacagaccat     1080
    tccacccagc cccaatcgct caaaacaacg acaccggtat ttgggacgag tagtggtaac     1140
    attggcagtg tgcttagtgg tgggggtgct ggaaggggtt cttcaggctc aggtcaatct     1200
35  ggtgtggacc tctccccctg tgaacgggtg agtggtcact aa                                     1242
   <212> Type : DNA
   <211> Length : 1242
       SequenceName : SEQ ID 687
       SequenceDescription :

40  Sequence
    -----
    <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
45  ttgggcctcc agttaagtgg cctggatgcc agtgacagcg accaaagggg gttaattttg      60
    gccaaagcgg cctgagcggc atttcgtggc agttgggtca accggttggg acgggtcgag      120
    agtgtgtggg atttgaaggg ggtgtgggag gatcaagctc acagcgcggt gtccgagtcg      180
    caagcagcta caagtagtac caccaccacc gcaacagggg acaccttacc ggagcaccgg      240
    aatgcctcgc cgtaccaaat tagctccacc gacaaggatt cgtacaaggc ttccactcaa      300
50  ggctccggtc aaaccaatc ccaaacaccc tccccctacc tgcatttgat taaacctaaa      360
    aaagtactg cttcgcacaa gttagacgac gatcttaaaa acctgttgga cccaacgag      420
    gttcgggtga agctgcgcca aagctttggt acagaccatt ccaccaacc ccaaccccaa      480
    cccctcaaaa caacgacacc ggtgtttggg acgaatagt gtaacctcgg tagtgtgctt      540
    agtgggtggg gtaccacgca ggactcaagc accaccaatc aactgtcacc cgttcaacgg      600
55  gtgagtgggt ggcttgggg gcagttacca agcacgagtg acggaaacac ctctccacc      660
    aacaacctcg cgcctaatac taatacgggg aatgaggtgg tgggggtggg agatttgtct      720
    aagcgagctt ccattgaatc aagtcggttg tgaatagcat taaaacctta g              771

   <212> Type : DNA
   <211> Length : 771
       SequenceName : SEQ ID 688
       SequenceDescription :

60  Sequence
    -----
    <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
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gtgcgcgata acactgccaa gggcatcact gccggcagtg gcagtcaaca aaccacgtat    60
gatcctgcgc gaaccgaggg cacccttgacc accaccacct ttgcgctgcg ccggtatgac    120
ctcgccgggg ggcgccttata cgacctcgac ttttcgaagt taaacccaca aacgccaacg    180
cgtgatgcc aactgccagat cacccttaac ccctttggcg gctttgggtt gagtggcagt    240
5 gcaccccaac agtgaaacga ggtcaaaaac aagggtcccc tcgaggtggc ccaagacccc    300
accgatcctt atcgggtttgc cgttttactc gtgcgcgcga gtgtggtgta ctatgagcag    360
ttgcaaaggg gattagcgct ccctaaccac gggagttcgt caggctccgg tcaacaaaac    420
accaccattg gcgcgtatgg gctgaagggt aagaacgcgc agggcgacac cgcaaagagc    480
aatgaaaaac tccagggcga tgaatccaag tcttccaatg gatottcaag cacttccacc    540
10 accacccaac gtggttcgac caattccgac accaaagtca aggttttaaa aatagagggtg    600
aaaaagaaat cggactcggg ggacaatggg cagctgcagt tagaaaaaaa tgatctcgcc    660
aacgctccca ttaagcgggg cgaggagtcg ggtcagtcgc tccaactcaa ggccgacgat    720
tttggtatgc ccccttccag ttcgggatca ggcggcaact ccaaccccgg ttccccacc    780
ccctgaaggc cgtggccttc gactgagcaa attcacaagg acctcccaa atgatccgcc    840
15 tcgatcctga ttctgtacga tgcgccttat gcgcgcaatc gtaccgccat tgatcgcggt    900
tgatcacttg atcccaaggt gatgaccgcg aactatccgc ccagttgaag aatgcccgaag    960
gaaacacacc accggttctg ggactgaaag gcgcgcgcatg ttttgttcca aaccaccggg    1020
tttgatgaaa gtaatacttc gaacaccaag cagggtcttc aaaaggaagc tgactccgac    1080
aagtcggccc ccacgcctc cccgtttgaa gcgtacttcg ccaacattgg caacctcacc    1140
20 tggttcgggc aagcgtttt ggtgtttggt ggcaatggcc atgttaccac gtcggcccac    1200
accgcgcctt tgagtatttg gctttatata tatttagtaa aggcagtcac ttttaggttg    1260
cttttagcta actctttatt atcaaaaagc aacatatata aaaaaacagc taatttaa    1317

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<212> Type : DNA

25 <211> Length : 1317

SequenceName : SEQ ID 689

SequenceDescription :

Sequence

30 -----

<213> OrganismName : Mycoplasma pneumoniae

<400> PreSequenceString :

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gtgcgcgata acattgccaa gggcatcact gccggtagta acacccaaca aaccacgtat    60
gatccacccc gaaccgaggg cacccttgacc accgccacca cctttgcgtt acgccggtat    120
35 gacctcgccg ggcgcgcctt atacgacctc gatttttcga agttaaaccc acaaacgccc    180
acgcgcgacc aaaccgggtc gatcaccttt aacccttttg gcggttttgg gctgagtggg    240
gctgcacccc gactcagtaa cgaggtcaag gataaggtcc ccgtcgaggt ggcccaagac    300
ccctccaatc cttatcggtt tgccgtttta ctcggtccgc gtagcgtggt gtactatgag    360
cagttgcagc ggggggttagc gctccctaac caaggaggtt cgtcaggctc cgttcaacaa    420
40 aacaccacca ttgggcgcgt tgggctgaag gtgaaaaacg ccgaggcgga caccgcgaag    480
agcaatgaaa aactccaggg ctatgaatcc aagtcttcca atggatcttc aagcattcc    540
accacccaac gtgggggttc gtcaaatgaa aacaaagtca aggcgttgca ggtggcgggtg    600
aaaaagaaat ccgggagtcg gggcaactcc ggtgaccaag gcaccgaaca ggtggaactt    660
gaatctaatt attttagcaa cgccccgatt aaacgaggtt ccaataacaa ccagcaagtc    720
45 caactcaagg cggacgattt tggtactgcc ccttccagtt cgggacagg cacccaagat    780
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agaacgcccc agtgaaacca ccacggtttg tgggactgaa aggcgcgcga tgttttgctc    1020
50 caaaccaccg ggttcttcaa cccgcgcgcg caccctcagt ggtttgatgg cgggcagacg    1080
gtcgcgggata acgaaaagac cgggtttgat gtggataact ccgaaaaacac caagcagggc    1140
tttcaaaagg aagctgactc cgacaagtcg gccccgatcg ccctcccgtt tgaagcgtac    1200
ttcgccaaca ttggcaacct caccgtgttc gagcaagcgc ttttgggtgt tgggatttgt    1260
ttgtcttaa

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55 <212> Type : DNA

<211> Length : 1269

SequenceName : SEQ ID 690

SequenceDescription :

Sequence

60 -----

<213> OrganismName : Mycoplasma pneumoniae

<400> PreSequenceString :

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atgctttggc ctttcagggt agtgtggtgg aagcaggtgc ttacaagcca aacacgagct    60
65 ccggccaac ccaatccact aacagttccc cctacctgca cttggtgaag cctaagaaag    120
ttacccaatc cgacaaagtt agacgacgat cttaaaaacc tgttggaccc caacgaggtt    180
cgcgccagaa tgctcaaatc atttgggtaca gaaaatttca cccaaccca accccaaccc    240

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caagccctca aaacaacgac accggtatatt gggacgagta gtggtaacct cggtagtgtg      300
cttagtggtg ggggggtacca cgcagggtctc aagcaccacc aatcaactgt cacccggttca      360
acgggtgagt ggggtggaccg ctaa                                     384
<212> Type : DNA
5  <211> Length : 384
    SequenceName : SEQ ID 691
    SequenceDescription :

Sequence
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10  <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
gtgcgcgaca acagcgccaa gggcatcact gccggtagtgt aaagtcaaca aaccacgtat      60
gatcccactc gaaccgaagc ggctttgacc gcatcaacca cctttgcgtt acgccggtat      120
15  gacctcgccg ggcgcgcctt atacgacctc gacttttagta ggttaaaccac acagacacca      180
acgcgcgacc aaaccgggca gatcaccttt aacccttttg gcggcctttgg tttgagtggg      240
gctgcacccc aacagtgaag cgaggtcaaa aacaagggtcc ccgtcgagggt ggcccaagac      300
ccctccaatc cttatcggtt tgccgtttta ctctgtccgc gtagcgtggt gtactatgag      360
cagttgcagc gggggttagc gtcacctaac caagggagtgt cgtcaggctc cgtcaacaa      420
20  aacaccacca ttggcgcgta tgggctgaag gtgaagaacg ccgaggcgga caccgcgaag      480
agcaatgaaa aactccaggc cgatgaatcc aagtcttcca atggatcttc aagcacttcc      540
accaccaccc aacgtggggg ttcgtcaggg gacaccaaag tcaaggcgtt gcaggtggcg      600
gtgaaaaaga aatccgggag tcagggcaac tccgggtgaac aaggcaccga acaggtggaa      660
25  cttgaatcta atgatctcgc caacgctccc attaacgggg gcgaggagtc gggtcagttc      720
gtccaactaa aggcagccga cttccggcac accccatcca gttcgggatac aggcggcaac      780
tccaaccccc gttccccac cccctgaagg ccgtggcttg cgaccgagca aattcacaag      840
gacctcccca aatgatccgc ctctgatcctg attctgtacg atgcgcctta tgcgcgcaat      900
cgtaaccgca ttgatcgctg tgatcacttg gatcccaagg tgatgaccgc gaactatccg      960
30  cccagttgaa gaacgcccga gtgaaaccac caccgggtgt gggactgaaa ggccagagat      1020
gttttgctcc aaaccaccgg gttcttcaac tcgcggcgcc accccgagtg gtttgaccag      1080
ggccaagcgg tcgcgggataa taccctaaacc ggggtttgata cagatgacac cgataataaa      1140
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tgaagcgtac ttgcgcaaca ttggcaacct cacttggttc gggcaagcgc ttttggtgtt      1260
35  tgggatttgt ttgtcttaat taactaa                                     1287
<212> Type : DNA
<211> Length : 1287
    SequenceName : SEQ ID 692
    SequenceDescription :

Sequence
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40  <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
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45  cagggcgctg aggcactgg ttcttcaacc acatctggat ctggccaatc caccacacgt      120
gggggttcgt caggggacac caaagtcaag gcgttgaggg tggcggtgaa aaagaaatcc      180
gggagtcagg gcaactccgg tgaccaaggc accgaacagg tggaaactga atctaataat      240
ttagccaacg ccccgattaa acggggctcc aatccagcaa gtccaactca aggcagccga      300
50  cttcggcacc accccatcca gttcggaatc tgggtcaatca ggcaccccca cccctgaag      360
gccgtggctt gcgaccgagc aaattcaciaa ggacctcccc aatgatccg cctcgatcct      420
cattctgtac gatgcgcctt atgcctttaa                                     450
<212> Type : DNA
<211> Length : 450
    SequenceName : SEQ ID 693
    SequenceDescription :

Sequence
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60  <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
atgtttggct tgaagggtgaa ggatgcaacc gtggatagtt cgaagcaatc aacggaaagc      60
ttaaggggcg aagaatcgag ttccagttcc accacatctt ccacctccac caccacacgt      120
gggggttcgt caggggacac caaagtcaag gcgttgaggg tggcggtgaa aaagaaatcg      180
gactcggagg acaatgggtca gatcgaactt gaaaccaaca acctcgccaa cgccccgatt      240
65  aaacggggct ocaataacaa ccagcaagtc caactcaagg cggacgattt tggtaacttc      300
ccttcagatt cggaatctgg tcaatcaggc acccccaccc cctgaacgcc gtggcttgcg      360
accgagcaaa ttcacaagga cttccccaaa tgatccgcct cgatcctgat tctgtacgat      420

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5  ggcgccttatg cgcgcaatcg taccgccatt gatcgcgttg atcacttggga tcccaagggtg 480
   atgaccgcga actatccgcc cagttgaaga acgcccaggt gaaaccacca cgggttgtgg 540
   gactgaaagg cgcgcgatgt cctgggtccaa accaccgggt tcttcaaccc gcgccgccac 600
   cccgattggt ttgaccaggg ccaagcggtc gcggagaata cccaaccggg gtttgataca 660
   gatgacaccg ataataaaaa gcagggtttt cgcaacaag gcgaacaatc ccctgcccc 720
   atcgccctcc cgtttgaagc gtacttcgcc aacattggca acctcacctg gttcgggcaa 780
   gcgcttttgg tgtttgggat ttgtttgtct taa 813

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<212> Type : DNA

<211> Length : 813

10      SequenceName : SEQ ID 694  
          SequenceDescription :

Sequence

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15  <213> OrganismName : Mycoplasma pneumoniae
      <400> PreSequenceString :
      atgggcagtc aaaaccaggg ttctacaaca actacctcag cgggcaatcc cgattcttta 60
      gttactgata aagttgatca aaaagggtcag gtgcaaacaa gtgggtcaaaa ttaagtgtat 120
      accaactaca ccaacctctc ccccaacttc acccccacat ccgactgacc gaacgcgctc 180
20  agcttcacca acaagaacaa cgcgcagcgc gccagctgt tcttgacggg ctgtgtgggc 240
      agcatcccggt tgttggttaa taagagtggc gaaaataacg aaaaattcca agccaccgac 300
      caaaaatggt cctacaccga attaaagtcg gatcaaacca agctcaacct ccccgcttat 360
      ggtgaggtga atggggtggt gaatccggcg ttggtggaaa cctattttgg gacgacgcgt 420
      acgtctagca ctgcgaacca aaacagtaca accgtccccg gtatcggttt taaaattccc 480
25  gaacaaaata atgattcaaa ggctgtgctg atcacccccg gggtggcttg aacgccccag 540
      gacgttggtta acctcggtgt cagtggaacc agcttcagct tccagctcgg cgggtggctg 600
      gtcagcttca cggactttgt caaacccccg gcgggttacc tcggactcca gttaacgggc 660
      ttggatgcaa gtgatgcgac gcagcgcgcc ctcatattgg ccccccggc cctgagcggc 720
      ctttcgtggc agttgggtca accggttggg ccgcgtggag agtgtgtggg atttgaagg 780
30  ggtgtgggag gatcaagctc agtccgactc gcaaggatct accaccaccg caacaggggc 840
      taccttaccg gagcacccga atgctttggc ctttcagggt agtgtgtggg aagcgagtgc 900
      ttacaagcca aacacgagct ccggccaaac ccaatccact aa 942

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<212> Type : DNA

<211> Length : 942

35      SequenceName : SEQ ID 695  
          SequenceDescription :

Sequence

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40  <213> OrganismName : Mycoplasma pneumoniae
      <400> PreSequenceString :
      atgagttttt gtttagtggg cactgttaat aataacggtt ggaaatcgcc gtttcgacat 60
      gaaacaaaat accgagcagg gtatgataag ttcaagtatt acaaaaccca ctaccggggt 120
      gcaaaaaaag ctggaaccaa tgatgatcga tggagatgaa ctgcttgggt tgaccttgac 180
45  tttgcccacc aaaagatagt gctcattgaa aggggtgaac ttcaccgtca agcagattta 240
      aaaaaatctg accccgcaac aaacgaaact tccaaaaccg tttggggtag cattaaagaa 300
      aagctgttac aaaacgtcaa caacctccac tcagagaaag gagtattott atggtttccgt 360
      caatctgggt ttacaactac tagaaactag 390

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<212> Type : DNA

50      <211> Length : 390

         SequenceName : SEQ ID 696

         SequenceDescription :

Sequence

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55  <213> OrganismName : Mycobacterium tuberculosis H37Rv
      <400> PreSequenceString :
      atggctgaac cgttggccgt cgatcccacc ggcttgagcg cagcggccgc gaaattggcc 60
      ggccctcgtt ttccgcagcc tccggcgccg atcgcggtca gcggaacgga ttccggtggt 120
60  gcagcaatca acgagaccat gccaagcatc gaatcgctgg tcagtgcagg gctgccccgc 180
      gtgaaagccg ccctgactcg aacagcatcc cggcggcgga cgtctatgcg 240
      aagaccgatc agtcactggg aaccagtttg agccagtatg cattcggtc gtcgggagaa 300
      ggccctggctg gcgtcgctc ggtcggtggt cagccaagtc aggtaccaca gctgctgagc 360
      acaccgtgt cacaggtcac gaccagctc ggcgagacgg ccgctgagct ggcaccccg 420
65  gttgttgca cggtgcgca actcgttcag ctggctccgc acgccgttca gatgtcgcaa 480
      aacgcacccc ccatcgctca gacgatcagt caaacgccgc aacaggccgc ccagagcgcg 540
      cagggcgcca gcggcccaat gccgcacag cttgccagcg ctgaaaaacc ggccaccgag 600

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312/341

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caagcggagc cgggtccacga agtgacaaac gacgatcagg gcgaccaggg cgacgtgcag 660
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<212> Type : DNA
<211> Length : 843
SequenceName : SEQ ID 697
SequenceDescription :

10 Sequence
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<400> PreSequenceString :
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20 tccggccagc cgcgcgaggc caccgcgagc gtagtgctca aattcttcca ggacctcggt 360
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25 gccaggggtg agctgctgcc gtcgtttgtc ggcgcttgcc aagcccagggt gcgcgcagc 660
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<212> Type : DNA
<211> Length : 684
SequenceName : SEQ ID 698
SequenceDescription :

30 Sequence
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<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
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aaggccggcg agcacgggga tctgccgctg tcgttcagcg tgacgaacat ccagccggcg 360
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45 gaggttgctg aggcgcgagg gaactga 507
<212> Type : DNA
<211> Length : 507
SequenceName : SEQ ID 699
SequenceDescription :

50 Sequence
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<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
55 atgacctact cgccgggtaa ccccggtatc ccgcaagcgc agcccgcagg ctctacgga 60
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aacatcgagg tggcagtgct cggcctgggt gcgtacttcg ccagcttcgg ccgatgttc 180
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65 ggcggctatt cgtccagtcg gagccaatcg ggcagtgat acactgctc gcccccggcc 720
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tcggctccag tcaactatcc aaaccccagc gggggcgagc agtcgtcgtc ccccgggggg 900
gcgccgtct aa 912
<212> Type : DNA
<211> Length : 912
5 SequenceName : SEQ ID 700
SequenceDescription :

Sequence
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10 <213> OrganismName : Mycobacterium tuberculosis H37Rv
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30 gccagtgcg ccaccagcac cgctgccgcc acggcagcag caacaaatgc gctccggggg 1140
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<212> Type : DNA
<211> Length : 1215
35 SequenceName : SEQ ID 701
SequenceDescription :

Sequence
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40 <213> OrganismName : Mycobacterium tuberculosis H37Rv
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45 ggggtatcgg cggcgccagc cggcgagatc tacccgccag acgtggctga cgaggcccaa 180
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gatctccctg aggtcggagg acgggtcacc agcccgccac agcccgccgt cgcgcgctc 300
accggtact ccgctaaccat cggcggaactc tccgtgccgc acagctggaa tcttccgcca 360
gcggtgcgcc aagttgcggc gatgttcccc ggccgcgactc cgatgtatat gacggggagt 420
tcggacggct cctacgccgg cctggcagcg gcgggtttgg ccggcaccgc tctggccggg 480
50 cttgccgccc gcggtggctc cgcgccgacc ccggtgcag ccgccccggc cggagccggc 540
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cttgccggca cctggcggc gatccccga gcgaccatca tcgtggtacc gccgtccccg 720
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55 <212> Type : DNA
<211> Length : 735
SequenceName : SEQ ID 702
SequenceDescription :

Sequence
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60 <213> OrganismName : Mycobacterium tuberculosis H37Rv
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65 tcggtgcgc ccggcacgt gatcgaccag ttcgtgctcg atgtggccga gcacccggtc 120
gaggtgttaa ccgagaccgt ggtgggcacg gatcggtcat tggccggcga aaaccaccgc 180
ctggtcgcta cccggtctgt ttggccggat caggccaaag ctgacgagct gcagcacga 240
```

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5 gccccggggg atgtcttcc tgggggtagg tccgcgcgag acaccacggt tcttgccgac 540
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gcccggtggc cggcgatggc ggccggcgcc gctacgatgg cgcacccggc cctggtcgcg 660
gatgcgacca cttcgctccc ccgggcccag gcggggcaat cgggttctga aggcgagcag 720
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10 gacgaatacg gggcagccgc ggatcgctcg gcgcggttga gccgacggtc gctgctgac 840
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20 accacgccc caacgaccgt cgcgccgac accgtcggc cgcgacggg cgtccgacc 1440
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ccgacgcagc agcccacgca acaaccaacc caacagatgc caaccagca gcagaccgtg 1560
gccccgcaga cgtggcgccc ggctccgac cgcgcgtccg gtggcgcaa cggcagcggc 1620
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```
25 <212> Type : DNA
    <211> Length : 1647
        SequenceName : SEQ ID 703
        SequenceDescription :
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#### 30 Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
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   tcaccagccg gtatcgccaa tgccgacgac gcgggcttgg acccaaacgc cgcagccggc 120
   ccggatgccc tgggctttga cccgaacctg ccgcccggcc cggacgtgac acccgctgat 180
   actccgcccg ctccggagga cgcgggcttt gatcccaacc tccccccgcc gctggccccg 240
   gacttcctgt cccgcctgac ggaggaagcg cctcccgctg ccgtggccta cagcgtgaac 300
   tgggacgcga tcgcgcagtg cgagtcgggt ggaactgggt cgatcaaacac cggtaacggg 360
40 tactacggcg gctgcgggt caccgcccgc acctggcggt ccaacgggtg ctcgggggtc 420
   gcggccaacg cgagccggga ggagcagatc cgggtgggtg agaacgtgct gcgttcgcag 480
   ggtatccgcg cctggccggt ctgcggccgc cgcggctga 519
```

```
<212> Type : DNA
<211> Length : 519
45 SequenceName : SEQ ID 704
   SequenceDescription :
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#### Sequence

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50 <213> OrganismName : Mycobacterium tuberculosis H37Rv
   <400> PreSequenceString :
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   cccacctcgg cggccgggag caacaccgcc accaccctgt tcccggtcga cgaggtcacc 120
   cagctggaga cgcacacctt cctcgattgc caccccaacg gcagctgcga cttcgtcgct 180
55 ggagcaaata tgcgcacacc cgcgccccgc acgggctttc cgcgggggct gtggcgcgcg 240
   caaaccaccg agatccgttc gacgaaccgg ttggcctatc tggacgcgca cggcaccagc 300
   cagttcgaac gggtaatgaa ggccggcgga tccgacgtga tcaccaccgt ctacttcggc 360
   gaggtccgc cggacaaata ccagaccacc ggggtcatcg actcgaccaa ttggtcgacc 420
   ggtcaaccga tgaccgacgt caacgtcatc gtgtgtacac acatgcaggg ggtctaccgc 480
60 ggggtcaacc tcacctcgcc cagcacctgc gcgaagcca acttttcccta g 531
```

```
<212> Type : DNA
<211> Length : 531
65 SequenceName : SEQ ID 705
   SequenceDescription :
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#### Sequence

```
-----
<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
5 atgacaccgg gtttgcttac tactgcgggt gctggccgac cacgtgacag gtgcgccagg 60
  atcgtatgca cgggtgttcat cgaaaccgcc gttgtcgaga ccatgtttgt cgcgttggtg 120
  ggtctgtcca ccatcagctc gaaagccgac gacatcgatt gggacgccat cgcgcaatgc 180
  gaatccggcg gcaattgggc ggccaacacc ggtaacgggt tatacggtg tctgcagatc 240
  agccaggcga cgtgggattc caacgggtgt gtcgggtcgc cggcgccgcg gagtccccag 300
  caacagatcg aggtcgcaga caacattatg aaaacccaag gcccggtgtg gtggccgaaa 360
10 tgtagtctct gtagtcaggg agacgcaccg ctgggctcgc tcaccacat cctgacgttc 420
  ctgcggcgcg agactggagg ttgttcgggg agcaggggacg attga 465
<212> Type : DNA
<211> Length : 465
  SequenceName : .SEQ.ID.706
15 SequenceDescription :

Sequence
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<213> OrganismName : Mycobacterium tuberculosis H37Rv
20 <400> PreSequenceString :
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  atgggcccac tcacgcagct tcccagcag gccatgcaag cggggcaggg agcaatgcag 120
  ccgctgatga gtgcgcttca acagacctat ggcgcgagg gactggacgt cgcggacggg 180
  gcgcggctgg tggacagcat cgaagtgtag cccggcctcg gcggcgagcc gggcgctggt 240
25 gacgtcggcg cggcgggcgg ggggtgtggc accacccga cgggctatct gggccccca 300
  cccgtgccga cgtcgtcgcc accgacgact ccagccgggg cgcggccaa gtcggtgacg 360
  ccggaccggg ttagtggcac cccgcggggc tcggggccgg ccggcatgac cggcatgcgc 420
  atggtgcggc cgggcgcggt ggggtgcggg gcggaaggag ccaataagga caagccggtc 480
  gagaagcggg tgacgggctg tgccgaatgg tcaaccggtc aaggggcgct taacagtacc 540
30 gccgagtggt ccggtgaaat ctgccgacga caagccgggt gtcaccaagt cgacgcgacg 600
  gatccttggt gtgccgaacg acgacaaggt taa 633
<212> Type : DNA
<211> Length : 633
  SequenceName : SEQ ID 707
35 SequenceDescription :

Sequence
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<213> OrganismName : Mycobacterium tuberculosis H37Rv
40 <400> PreSequenceString :
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  tcgctggggc ccccatgtc cagctgggag cgcttcattt ttggacgagg ccctccgggt 180
  caggccgaag cctgtcattt tccgcctcct aaccagttcc cgcggccga aaccggctac 240
45 tgggtgatct cctaccgct atacggcgtc cagcaggctg gtgcgcggtg tccgaagcgc 300
  caggcggccg cgcagctccc ggatgggttg ccgatgctgt gtctgggagc ccgtggatgg 360
  cagccgggat ggtttaccgg ggccgggttc ttccctccgg agccataa 408
<212> Type : DNA
<211> Length : 408
50 SequenceName : SEQ ID 708
  SequenceDescription :

Sequence
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55 <213> OrganismName : Mycobacterium tuberculosis H37Rv
  <400> PreSequenceString :
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  accgtgatga tcatcgtggt gttcgggcag gtgcggttcc atcacaccac cgggtactcc 120
  gcggtgttca cccatgtcag cgggtcgcgg gccgggcaat ttgtccgcgc tgcgggcgta 180
60 gaggtcggca aggtcgccaa ggtaacgctg atcgacgggg acaagcaagt attggtggac 240
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65 tcgatcatca ccgtgttcca agggcaaggc gccaccatca acgacatcct cgaccagacc 540
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aagctagagg tgctgacac tggactgaag aacaggggcg acccgctggc cgcggcggcg 720
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5 <211> Length : 828
    SequenceName : SEQ ID 709
    SequenceDescription :

Sequence
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10 <213> OrganismName : Mycobacterium tuberculosis H37Rv
    <400> PreSequenceString :
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gtgagcgcac ccgcccggcg tcgtgccgcg catcgcgatc cgtgttcgga catcgcggtc 120
15 gttttcgctc gcggcacgca tcaggcttct ggtcttggcg acgtcgggtga ggcttcgtc 180
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20 gctgtcgccc ttttcggcga gccatccagt ggtttctcca gcattgtgtg gggcgggcgg 480
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gatccaatat gcaccggagg cggcaatatt atggcgcatg tttcgtatgt tcagtggggg 600
atgacaagcc aggcggcgac attcggcgcg aacaggctcg atcacgcggc atga 654

25 <212> Type : DNA
    <211> Length : 654
        SequenceName : SEQ ID 710
        SequenceDescription :

30 Sequence
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<213> OrganismName : Mycobacterium tuberculosis H37Rv
    <400> PreSequenceString :
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35 attgctcttg caacgctgtt gacgcttata aatcaagtcg tcggcactoc gtatattccc 120
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40 gtgcgggtcg gtggcggtgg cgcctaccag cccaaattca cccaccacat gtatctgccg 420
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gcggcgggcg cggctctggc ggcccctata agcggctgcc gcgggttcag cacgtccctc 660
45 ttagcaaaaa gaaatcacc agtaatcgtc gggaaatag 699
<212> Type : DNA
    <211> Length : 699
        SequenceName : SEQ ID 711
        SequenceDescription :

50 Sequence
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<213> OrganismName : Mycobacterium tuberculosis H37Rv
    <400> PreSequenceString :
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gctgccgaag ccaccgccgt caagtcgtgt ggctactccg actgcaaggc gctcaccagt 240
ttcaccgcct gcggcgccgt cggcccaac gatagggcac accaggagg agttggaccc 300
60 accttggcgg ccgcatgaa ggacgccctg accaagctcg gcggcggcta catcgacacc 360
tgggcctgca actaa
<212> Type : DNA
    <211> Length : 375
        SequenceName : SEQ ID 712
        SequenceDescription :

65 Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
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acaaactcga gcacggcgcc gctaaccgat tggagcttg aattcgactt gccggcagga 240
gaatccgtct tgcacacatg gaatagcacc gttgcacgat ctggcacgca ctacgttctc 300
agcccaagca attggaatcg catcattgcc cccggtggtt cagccacggg cggcctaaga 360
10 ggccgggctga ccggttctta ctgcgcggc tcgagttgtc tgcacaacgg gcaatatcct 420
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<212> Type : DNA
<211> Length : 429
SequenceName : SEQ ID 713
15 SequenceDescription :

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## Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv
<400> PreSequenceString :
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acgctttatg ccgaattgcc tcgggtccggg ggtctatacc gaacagccaa cgtcacatat 180
cggggcatca ccatagggaa ggtcacggc gtcgaaccaa ccgagcgggg cgcgcgagca 240
25 accatgagca tcgacaatgg ctaccagatc cccaccgacg cctcggccaa tgtgactca 300
gtgtcggcgg tcggcgagca gttcgttgac ctggtgtcga cccgcaccag cggtcogtat 360
ctgcggcatg ggcagacgat caccacgact acggtcccca gccagattgg cccggcgctg 420
gacgcgcgca accgtggatt ggcagtgtcg cccaagacc gggtcgcgtc ggtgctgcac 480
gaggcgtcgg aggcgtggg cgggctggga tcctcactga atcgctcat cgaagccacc 540
30 caggcaatcg cccacgatgt caggggcagc ctcgaggaca tcgacgacat catcgagcgt 600
tcggcgctta tcacgatag ccaggtcaat tcgggcaacg agatcgccc cttgggcccgc 660
aacctcaaca cgtggccgc tcagaccgcg cagaccgatc cggcgggtgc aagcattctg 720
gccaacgcgg caccgactgc cgatcaggtc aacgccacgt tcagcgacgt gcgggagtcg 780
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aatgggcaac aaccacaacc gtgcgtctac acccgagca catttcctac aaccatttac 1440
45 gacgtgcaga gcggcaaatg cgtagcacc gacggtgtgg tgtattccgt tgaggcttcg 1500
actcatgccg gagccgacgg atggaaggtg atgctggcac caaccggctg a 1551

<212> Type : DNA
<211> Length : 1551
50 SequenceName : SEQ ID 714
SequenceDescription :

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## Sequence

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55 <213> OrganismName : Rickettsia prowazekii strain Madrid E
<400> PreSequenceString :
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atgagttcta taaaaaatac cactaatcta gatctttcat ctatcaccaa tacaattcaa 120
aaagccatga atattttttt taccactaac aaaatttcca cagaaagtat gcaatctttg 180
60 tttaagaaaa attccgagat tatacaaaat aatattaata ctatttttaa tagtactaaa 240
gaagtaataa attctaaaga ttttaaacaa gctactgaat atcatcaaaa atgtgtaaaa 300
tctattttatg aaacatctat ggacaatgct aaggaattag caaatattgc ttatgaagct 360
tcaaataaaa tatttgaagc cgcaaataaa catattacca agaattattca taatgcttct 420
aataatatac ataatactgc agaacaagta caaaaaaact ttaataacaa atctgcttaa 480

<212> Type : DNA
<211> Length : 480

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SequenceName : SEQ ID 715  
SequenceDescription :

## Sequence

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5 -----
  <213> OrganismName : Rickettsia prowazekii strain Madrid E
  <400> PreSequenceString :
    atgaatatta aattagttac atatttttta atattagtaa gctcattaaa agtaaagtgt 60
    gattttaaatac atattcaaga tagtttttaa tatcaagaag cagagcagtt aacaatagaa 120
10  ttaccttgga atgactgtac tgcaattcat aaattcttag aagaaaagtt atttttttca 180
    gaacaacaaa taaaaaaga aaataaaatt catgagaaat ataagcaatt ttattttacaa 240
    cataataata agctttctga tttttctatg caatttctag aaaaaaatc tgaaattaat 300
    agtgtcgaaa ctttaataatc aggcttttta aaattttgtg aagataattt tcaacaaggt 360
    aaaagtaaat cgcattcttt aaattttttc.aaaaacaac aagaccaatg gttacataat. 420
15  ataagaaatg agaattataa aacatattat aagaagaaat atgaagacaa tacctttaga 480
    aatattaatt aa 492
  <212> Type : DNA
  <211> Length : 492
    SequenceName : SEQ ID 716
    SequenceDescription :

```

## Sequence

```

25 -----
  <213> OrganismName : Rickettsia prowazekii strain Madrid E
  <400> PreSequenceString :
    atgaaaaagt tacttttaaat tgctactgca agtgcaacaa ttttatcttc tagtgtatcg 60
    tttgcagagt gcatgtataa tgaatgggtat ttaagagcag atgcaggtgt agcaatgttt 120
    aataaagaac aagataaggc aacaggtgtt aaattaaaaat ctaataaggc tattccaatt 180
    gatttgggta ttggttatta tatttctgaa aatgtacgtg ctgatttaac ttagggaact 240
30  acaatagggt gaaaactcaa gaaatacggg gcagcaacta atacacattt tactgggtact 300
    aacgtttcag tgagccataa gcctactgtt acacgtttgc ttattaacgg ttatgtagac 360
    ttaacaagtt ttgatattgt tgatgttttc gttgggtgtg gtgtcgggtc tgcattagtgt 420
    aaagagaaaa ttagtgggtt aagcgggtctt gcatctaaca ctaaaaataa aaccaatgta 480
    tcatataagc tgattttcgg tacttctcgg caaattgcag atgggtgttaa agtagagcta 540
35  gcatatagct ggataaatga tggtaaaaca aaaactcata atgtaatgta caaaggggca 600
    agtgtgcaaa ccggtggtat gcgttatcaa agtcataacc tgacagtagg tgaagattt 660
    ggtatataa 669
  <212> Type : DNA
  <211> Length : 669
    SequenceName : SEQ ID 717
    SequenceDescription :

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## Sequence

```

45 -----
  <213> OrganismName : Rickettsia prowazekii strain Madrid E
  <400> PreSequenceString :
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    ttattaagca gttgctccga atctacgcgt gatgaaaatg gattactttac agatagtcaa 120
    agtactataa ttcgagatta tataatatcg caaaattcta aaaatcttaa agtgaacctt 180
50  aaagaaaagt ttggttccaa tttaaaagga gtaaaattaa taggaataaa gttacacaaat 240
    gaagattttat cgggaataga tttcacttca tgcgaaatat tacggactga cttcatgggt 300
    agcaacttag aaaaagcaat acttacaaat tcggtaattc aagaaaagtaa ttttgcggat 360
    tcagtaataa aaaatatttc aggcataaat gctgattttc aaggttcaat ttttaataat 420
    ataacattac aaaatacaaa ttttggtcaa tcaaatttca gtgatactgc ttttaataaa 480
55  agtactataa tcaatgtcaa ttttgaaaat tctaaattta gtaatgtatt atggtgtcac 540
    agtaatatgt acagtagtaa ttttcaaaaa actcatctaa aaaataatag ctttaaaaaat 600
    actaatgtaa tgaattcaat attttatggt gcagatttag gcaaaagtgt aataaataat 660
    acaaatttta ctaataatta ttttgaatct agtgacctaa gtaacactaa attcacatca 720
    gtaatcatta aagattctaa cttcacacaa agtattttta attcagttaa tttcaataat 780
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    ttatcaataa aaaatagtaa tactaatttt gtaaggatta ataaatcaa agggtttaat 1020
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65  tttaaagtca ttaatactga ttttaacaac agtgaaaata taaactcaaa tttcactaat 1140
    ggacaattta ataatgtaaa tttttctcaa tctttaatac aaaacgtaaa ttttacagac 1200
    gtgaaaatta ctttaggcaa tttaaatcaa gtagctctaa taaattccaa tctaataaac 1260

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actaatatta ttaactcagt cctttctaata tcacaaataa ataatatata ctaccaagca 1320  
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 ttagcaataa tgaattttaac aaattttaac ttaagtaatt tagtggttaa tggagtagat 1500  
 5 ttttcaaaaa gcatctttaa aaaagctaata ttaacaaata cagtaataaa aaattctatt 1560  
 ttaaagatg ctaatttttc tgcagcaata cttactaaaa cagatttctc aaaatcgata 1620  
 ttaacaggta gtatatttaa gtttgctcaa attgatcaga catgttttag taattccgac 1680  
 ttaacaaata ctgattttac tgaagcaaca attaaaaata ctgcatttga taatgctaata 1740  
 acacacggta taaaaggatt agaataa 1767  
 10 <212> Type : DNA  
 <211> Length : 1767  
 SequenceName : SEQ ID 718  
 SequenceDescription :  
 15 Sequence  
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 <213> OrganismName : Porphyromonas gingivalis W83  
 <400> PreSequenceString :  
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 gtggcagccc taccttctat cggatttcaa gagtcaagtt gtacccgaat caggttcgag 180  
 gttgttttcc ccggttttta tagtggtgaa aaacgagaag gcaaccaagt ctttcagcgc 240  
 atttccatgc cgggttgggg ctcggttggg aatctggggc aagctgaatt gcctgttttg 300  
 aaaaagatga tagccgttcc ggaattttca acagctaacg ttgctgttaa aatcaaagag 360  
 25 acggagacat tcgacaatta taatatctat cctaatecta cctatgtcgt agaggagtgt 420  
 cctgaggggg ggacttatct ggtagaggct ttccgataa acaatgacta ttatagccaa 480  
 aatgtaagcc tcccttctac tcaactatgtc tattctcaag acgggtattt tgcctcaca 540  
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 30 aacaccggca tatttaacaa agtagcctcc tctgcattta ttaattatga agctgatggc 720  
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 40 aatgtctatg aattgcacaa tctgattgaa aagactatca acaaagaaat ctcatataat 1320  
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 cgtttattct taaaagaaat cgctctggtt tacacagtca actctatctt aaaatctaata 1440  
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 45 tttaacactc atggaatgcc gactgtttgg gggatagggc agggactcga cgtcaatact 1560  
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 50 acgtattcga aattcaactt caatttgctt ggcgacctg cactaaacat tatggctcat 1920  
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5 tttgcaatag ctgctttgaa ggaattgttc aggatagaga aaatgtcagg caacgattac 3240
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10 atagatttga acatactttc ctgtgaacaa aggaaatcgc tcgaaagcca tcaaaatgta 3540
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15 tacagcatag agttcaatag atccaacttt gatcccggtt tctacctggt aacgctaaat 3840
gttgatcaga aaattataga tacggaaaaa ttacgaatca aataa 3885
<212> Type : DNA
<211> Length : 3885
SequenceName : SEQ ID 719
SequenceDescription :

Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
25 <400> PreSequenceString :
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acgagtggaa acctgaatac tgacaccata ataagagtca actctgacgg ttcgggtacc 120
ccctcttttt ctgacggaga tgatacattt attgttactg cgggtaatac cgcagtcggc 180
gttcttgcgt gtgcatctcc cggaaagcgc tgtgcgtgtg tatcttctct tgatgaagaa 240
30 agtactgccg atacaggaag taatgaaaat aatgccatag caaaactgga tatggcaaaa 300
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aaggctgggt acacgcttga ttataccaat gccagcggtt cattaaccga tgttgatata 420
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35 acggtgacgc tgaaaaatac atctgcagtc gcgcacaggg ggtctggaat tgtgctggag 600
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45 attatcagcg ttgaggggga atcaaatggg gaatttatta aggattcgag gattttcgcc 1200
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55 agtaaaaaag gcgcatacat tgactcctgg gcgcaatata gctgggttta aaactccgtg 1800
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gcgggttacg gttttgccct gaataaatcc tttggtctgg aagcggcgaa atatacgtgg 1920
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ctgaatccag cggccagcgt ctgggggaaat gtgggcgtgc agctgggtga taatggctac 2280
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65 <212> Type : DNA
<211> Length : 2322
SequenceName : SEQ ID 720

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## SequenceDescription :

## Sequence

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5 <213> OrganismName : Shigella flexneri 2a str. 2457T  
 <400> PreSequenceString :  
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 tgggatatgg cctggttgta tcgttacacc aacggtggcc tgaccgtgac tccgggtatt 480  
 15 ggtgtgcagt ggaacagcga aaaccagaac gaatactatt atggcgatc gcgcaaaagag 540  
 tccgctcgca gcggtctgcy tggctataac ccgaatgaca gctggagccc ttaccttgag 600  
 ctgagcgcca gctacaactt cctcgccgac tggagtgttt acggtagcgc gcgctacacc 660  
 cgtctgtctg atgaagttac tgacagcccg atggtggata aatcctggac tggcctgatt 720  
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 20 <212> Type : DNA  
 <211> Length : 747  
 SequenceName : SEQ ID 721  
 SequenceDescription :

## 25 Sequence

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<213> OrganismName : Shigella flexneri 2a str. 2457T  
 <400> PreSequenceString :  
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 ggtggtttgc agtggaataa tggcaacagc ttccgtttgt ttggcgagta ttactactct 360  
 35 ccgattcgc tctccagcgg tattcaaaagt tatgaggaag cgaatgctgg cgcgcgttac 420  
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 <212> Type : DNA  
 40 <211> Length : 543  
 SequenceName : SEQ ID 722  
 SequenceDescription :

## Sequence

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45 <213> OrganismName : Shigella flexneri 2a str. 2457T  
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 50 ataattggcg ttgctatcat gatggcttca tttgccgcaa acgctctgt attaccggaa 180  
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 ggcaatctgt atgtgtttgg cggcattggc aaaaacagcg agggattgac tcaggtattt 420  
 55 aatgacgtac acaaatataa ccccaaaacc aatagctggg ttaaattgat gtgcgacgcg 480  
 ccgatgggca tggcggtgca tgtgactttt gtacacaacg gcaaggctta tgttactggc 540  
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 <211> Length : 1215  
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 SequenceDescription :

5 Sequence  
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 ttagccaagg gtgtcggctc tcaagtgaag cagggattcc aggagcgagt gagcgaaacc 360  
 acagggcgaa aactggctgc ttcgatacgc gaaagcatgg agccgaaaga agcaagccaa 420  
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 SequenceDescription :

25 Sequence  
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 gatgtcagct tactggacaa tgtgacgctt tatgacagtt ttgtgccggg tgaatttggg 480  
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 65 gacgaaaaac ttgatagcag cctgacctgg gacacccgt tgtcctggac gccacaattt 2220  
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gttaataata ccattcaacc agtgaaagggt gtatatagcg gtacgttaac tgcattggacg 180  
cctttggcaa cagggtattgt tggcgcattct gatgggcaga gccacgacta tgctgtaact 240  
15 ttcccggatg atatttatgc ggagagcagt acttcagcgg atgcagtaat ttctgggtgac 300  
aataaccggg accataaact gaaagtttcc ctgacaacgc ttgagcagga tcctccttca 360  
gctgcctccg aagagattgg cggttaagcgt tatatgatgc tgaaaaatac tggaaacaggt 420  
gggtgcctatc gcgtcgtttc ccatatgaaa gaacagggtt ttgagccaga ctcttacacc 480  
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<212> Type : DNA  
<211> Length : 513  
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SequenceDescription :  
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<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
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gctgacgact gttcagctgc aaacccaggc aaaagcggcg aatgtaccac cgcgtacaac 240  
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35 aaccaggcgc aggtcagca atccagcggg agtttctgga tgccgtgat ggccgggttac 420  
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gagccacaac agcctgtccc cacagtggcc tcggtgccga cgatcccgcg gcagccaggc 180  
ccaattgagc acgaagatcg aacggcaccg cctgcgccgc atattcgcca ttatgactgg 240  
aatggcgcaa tgacgcccgt ggtcagtaag atgcttgggg ctgacggggg gactgcgggt 300  
55 agcgtcctgc tggttgatag cgtaacaac cgtactaacg gtctcgctgaa tgccgcagaa 360  
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cagcaactgt cgatggctaa gcaacagtta ggtttgtcgc cgcaggacag tttaggcacc 480  
cgtagtaaa ccataggcat tgcccgaat gtcggcgctc attacgtgct gtactcctgc 540  
gcctctggca acgttaacgc tccgacccta caaatgcagc tgatgctggg gcagacgggc 600  
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<211> Length : 642  
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<213> OrganismName : Shigella flexneri 2a str. 2457T
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   cgtgatggta gcacaacgtc tcttgaatgt acgtcgacgt taacaagaaa tgctaaaaca      180
   gatcattctt tatactactc tgctaaccct tcagtcattt taaaaaaaga tggtagcgggt      240
   agttttacga ttgttggcct aactgatgaa gatacaccga ggaaattttc ccattcgtat      300
   ttttttacct acaaaataga tagtaacgga cggatctcag gtaatgctaa ggccaaagtt      360
   tcggggactgg aaaatcagat aaaggatgag aacttcagac tcaattttct cgatgcatct      420
10  ttaacaggta aaggcaatgc gaggctaagc aagtttaata atgtctatat ttttagtatc      480
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<211> Length : 516
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15  SequenceDescription :

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<213> OrganismName : Shigella flexneri 2a str. 2457T
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   gaaaccacca aagctgcgtt taatcagatg gtgcaagggc ataagctacc tgcatgggtg      180
   atgaaaggcg gtacttatac tccgcacaaa accgtaacgt tgggagatga gacgtatcag      240
25  gtgatgagcg cgtgcaaac gcctgactgt ggctcgcaac gtatcgctgt gatgtggtcc      300
   gagaaatcta atcagatgac ggggctgttc tcggctattg atgagaaaac gtcgcaagag      360
   aaactcacct ggctgaatgt gaacgatgag ctttcgattg atggtaaaaac ggtgctgttc      420
   gcggcggtga cgggcagcct ggaaaacat ccggatggct ttaattttaa ataa      474
30  <212> Type : DNA
   <211> Length : 474
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35  Sequence
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<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
40  atgaaaaaac aatttttggg aaaagctgtg tttactgttg cggctacggc agcaacagtt      60
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   aatgccaaata cttatcctgt tggccaatgt acttgggggg ttaaagctgt tgcaacttgg      360
45  gcaggcgact ggtggggcaa tggcggtgat tgggcctcta gtgcttctgc acaaggttac      420
   actgtcggta aactccggc agtagggctc attatgtgtt ggacagatgg tggttatgga      480
   catgttgctt atgtcacagc tgttggtgaa gatggtaaag ttcaagtact ggaatccaat      540
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50  <212> Type : DNA
   <211> Length : 636
       SequenceName : SEQ ID 731
       SequenceDescription :

55  Sequence
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<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
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   gtgaaatcag gagatacttt atcagagatt gcttcaacac acggaacaaac tgttgataaa      180
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gcaacgacag cggaaccaac tgagaccaag accagccaaa caaatgaagt agcagcttca      600
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10  SequenceDescription :

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20  ggatttagta attatccata cgatgtttct atggattcag ataatagcag tagttcaagt      300
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   <212> Type : DNA
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25  SequenceName : SEQ ID 733
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30  <213> OrganismName : Streptococcus mutans UA159
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   aggccagatg gacaagctcc tgctggagggt ggtgctaaca ccacaactta tgattacagc      180
35  ggaatcaaca gtggtgttct agttgctaag ggtagcaagg tcacttccag ttccaaaacc      240
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   gtatcaacca acagtaccaa tatatcccca agcacgtctc ctattaccat gaatatttct      1260
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55  aaacttgtaa aaggtaaaag caaatatagc ctaacagtca caggaactta cagtcaaaag      1440
   gtaacaacca gctcaagtaa caaaccagc agcagttaca ttaaccgtag tgacttcgat      1500
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   <211> Length : 1557
60  SequenceName : SEQ ID 734
   SequenceDescription :

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65  <213> OrganismName : Streptococcus mutans UA159
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   cttaaatat taccagaagg caaaacaaat gagtattttag aaaaatatgc tcatgctgtt    180
   ggcttagatc cggtttctat tattcatggt tatcgcaatc aggaaatgag cgatgaactt    240
   atcctacctt cttctgcaga attggctgct tcttcagata gcaatataga aaagaaaaat    300
   gaaggaaaat caattgaaga acctcaagag ttagctattg atagtttgga tgttactcaa    360
   aatattacag aagagactcc ccaaatagaa gattttaagg ttgaatcaga ggaggcaagt    420
   aaaaaaatag aaaaaatacc atctcgactt agtaaatatg attatgatga agaaccgaaa    480
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10  gttggatatg tggtttataa tcagctgcaa actgattcaa ataagactga attaagtacc    600
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20  SequenceName : SEQ ID 735
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25  <213> OrganismName : Streptococcus mutans UA159
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   gctaagagtc ttcactcttg aaaaatcaat aaatcgataa ctatttcgct tccttttgggt    180
30  aaaaaaaaga tggaacaaac agcacgttac tattcagggtg aacagggttca gatcagttcc    240
   tcagctaaaa aagacagtct tggaaaaggg ctgtctcatt accaaaattg gattgggaca    300
   gttaaaaaga taaaatcaca aaaagacagt cgtcaaaagc atcattatag ttatgaagtt    360
   acatttgata atggcaaagc tttgaaatat gttcaggaaa aagacttagt taaaacaaaa    420
   agatctaaat acagcaaagg tcaaattgtc aaattaaaat cctctgcgac agctgattta    480
35  gatggcagca gtttaacgga ttatcgtgca tcagctggta aaatcgatca tatttcttat    540
   aatcatagca ataccacagg tggctataag tatgatatca cctttgatga aggcggcaag    600
   gtgactaata ttcaagaaaa agatttggat aaggtttatg aagttcagct aaaatcagaa    660
   aatactgcag ctcaaaataa tgagattcct aaacaagctt ttgcatatgc taaacaacat    720
   tctggtacta tcttaagttt gccaaacggt gaatttaaga ttggcagtc gacaccagac    780
40  aaggattata tcactttaac atctgatact gaaattcgtg gagataatac gacacttttg    840
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45  ggaatcaat ttactggcta tggcctgaa ttaactatg tcagtaagat tgatgataat    1140
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   gtttgggatg gtgggttgat aaaggctatt gatccaaatt atgaaaatta taataaagag    1260
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50  gtcaaaattt atgataatgt ttttagtaac tctttggtca gccggtttcaa tcaaaatggc    1440
   aaaagcgagg cgtggatttt taaagctatt cacctaaaaat caaattataa taatgctggt    1500
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<212> Type : DNA
<211> Length : 1521
55  SequenceName : SEQ ID 736
   SequenceDescription :

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## Sequence

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60  <213> OrganismName : Streptococcus mutans UA159
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   gctggaactt ttgatgtcaa cgctgtacag gcagccaacg gaaaaactat tcaatcgata    180
65  gatgttcgca tttggtctga agaaaatggg caggatgatt tgaaatggta tcatgccagt    240
   aatgatggca gcaatcaatt gacagttcat tttaatgctg agaatcatgg cagtaaggta    300
   ggttcttata ttgcgcatgc ttatattacc tatacagatg gtaatcgagt cgggggttaat    360

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      ttgggaaaaac gaaaattatc cttatctgca cgcgaattat ccttaaaaaca aggtggcctt 420
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5      aatggtaaga tgataccaat tagtgctcaa gatattgata ttctaaaacc gaaagtcaag 660
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15     tataatgatg gcacgactag cggacatgtt ttggctaata agcagctcaa tcaaattgtc 1260
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20     cacgttgaga gtaataaccg tattcaagtg aaagaagcta attataagaa tcaacaatat 1560
      atttccaatt ttgcgggatg gtttgatccc acgacttctt atttgggaag attaacttat 1620
      atttatcctg actaa 1635
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      <211> Length : 1635
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      SequenceDescription :

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30     <213> OrganismName : Streptococcus mutans UA159
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      aaacgtccga ctgaacatat caaaacaggt ttttcagcac tgcaaaagag tgttgctatt 120
      atcgtcgtga ttttagggat tattaccgct ttgattacta ttaataatta tcgcaatagt 180
35     tcacacaatg ataaaaaaga ttccacatct aaaaccacta tcatcaaaga aaaagaagtg 240
      gatgactcaa atagtaacaa caatgctgct aattctcaag ctgaaaatga cagcaataac 300
      aataataatt ctgcagaatc aaatcaaaac caaactgcaa caacagcaaa tgacagtaac 360
      agcaattcgg ctaatcaaaa tcaagccaat agccaatcac aagcaaataa tcagcaaaat 420
      caaaacaatg ctaatgctgg tcaataa 447
40     <212> Type : DNA
      <211> Length : 447
      SequenceName : SEQ ID 738
      SequenceDescription :

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45     <213> OrganismName : Streptococcus mutans UA159
      <400> PreSequenceString :
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      actaactgcg ctagctggtt caatcgtttt ggaaccattc gaaacaacac agctctaaaa 180
      ctacacatat taattaatgg cgtttccttt tgttttggaa ccattcgaaa caacacagct 240
      ctaaaacctc gtggaccaat tttgtctcg acatttctga atcgcgccat tcatctcagc 300
      cagatttcag cttcaaaatg a 321
55     <212> Type : DNA
      <211> Length : 321
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      SequenceDescription :

      Sequence
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60     <213> OrganismName : Streptococcus mutans UA159
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      actttacaaa caaaacagtc aagtgaaaaa tcaactgatg ctaagcaaac gacagaagct 180
      cattcagaaa gcagtcagtc ttcttctcat tctaataacg aggaaaccct tgctcccatt 240

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aatctaactc tttatattgt gccagccaat aaaaccttat ctaatacaata tttttctaata 480  
5 ggtcaaaagcg atgaatccga taaaacaaaa gatögtattg tttcttctga gagttaaata 540  
agtggcaaat ttacaaaaccg agttttattat catgtttcaa ctcattaa 588  
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<211> Length : 588  
SequenceName : SEQ ID 740  
10 SequenceDescription :  
  
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ataagtaaag caagttctaa aaaatcacaa acaagcactt cttctgttat gacaagtagt 180  
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cccaatccct atccagtatc attaaacaag cagtaa 636  
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<211> Length : 636  
SequenceName : SEQ ID 741  
30 SequenceDescription :  
  
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<213> OrganismName : Streptococcus mutans UA159  
35 <400> PreSequenceString :  
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agcaatagca gtaccgggga aaaaacaagt caatcatctg aagagactaa ggtccgatta 120  
attgttaaaa cggattctaa taaaaccgat gaaaaagtgc ctttcaaaaa aggtgctact 180  
gttatggatg tcttaaaaga caactataaa gttaaagaaa gcggtgggtt tatcactact 240  
40 attgatgggtg tcactcagga taaaaagca ggtaggtact ggatgtttga tgtaaatgat 300  
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<212> Type : DNA  
<211> Length : 390  
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SequenceDescription :  
  
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50 <213> OrganismName : Streptococcus mutans UA159  
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ctctttttct tgattattat tgggtatttta tttttgttac tttatacttc aaatgggtga 180  
55 agcaatgaaa aagcagccac ttcgggtttc tatagttctt ccaaaccggt caaaaaagcc 240  
aaaaatgagg caaatagtca aactgatgaa cagacaacag aagcagaaac aagttcaagt 300  
gaaacgacaa gttcctcttc agacagtgat ggcgagacaa ttacagttca aggaggtgaa 360  
ggggctgcag caattgctgc gcgtgcgggt atttctgttg ataaactcta tgagctgaat 420  
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60 taa 483  
<212> Type : DNA  
<211> Length : 483  
SequenceName : SEQ ID 743  
65 SequenceDescription :  
  
Sequence  
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<213> OrganismName : Streptococcus mutans UA159  
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cccagtgtca ctctcaatac caaagtcaat ggacgtgggt caggacttgg caagctagta 180  
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<211> Length : 714  
SequenceName : SEQ ID 744  
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<212> Type : DNA  
<211> Length : 687  
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 1353

SequenceName : SEQ ID 752

SequenceDescription :

55 Sequence  
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&lt;213&gt; OrganismName : Neisseria meningitidis serogroup A strain Z2491

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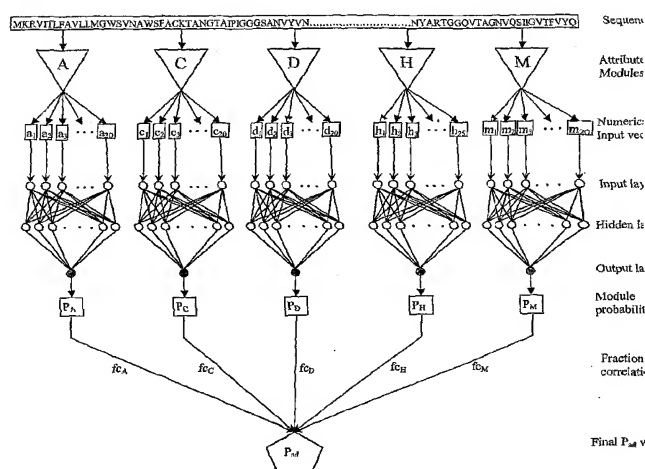
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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[Continued on next page]

(54) Title: COMPUTATIONAL METHOD FOR IDENTIFYING ADHESIN AND ADHESIN-LIKE PROTEINS OF THERAPEUTIC POTENTIAL

The Neural Network architecture



(57) Abstract: A computational method for identifying adhesin and adhesin-like proteins, said method comprising steps of computing the sequence-based attributes of a neural network software wherein the attributes are (i) amino acid frequencies, (ii) multiplet frequency, (iii) dipeptide frequencies, (iv) charge composition, and (v) hydrophobic composition, training the artificial neural Network (ANN) for each of the computed five attributes, and identifying the adhesin and adhesin-like proteins having probability of being an adhesin ( $P_{ad}$ ) as  $\geq 0.51$ ; a computer system for performing the method; and genes and proteins encoding adhesin and adhesin-like proteins.



**Declaration under Rule 4.17:**

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

**Published:**

— *with international search report*

**(88) Date of publication of the international search report:**

27 April 2006

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IN2005/000037

A. CLASSIFICATION OF SUBJECT MATTER  
G06F19/00 G01N33/68

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
G06F G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EP0-Internal, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ZUEGGE J ET AL: "Deciphering apicoplast targeting signals - feature extraction from nuclear-encoded precursors of Plasmodium falciparum apicoplast proteins" GENE: AN INTERNATIONAL JOURNAL ON GENES AND GENOMES, ELSEVIER, AMSTERDAM, NL, vol. 280, no. 1-2, 12 December 2001 (2001-12-12) , pages 19-26, XP004313161 ISSN: 0378-1119 the whole document ----- -/--	1-13, 18-21

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### ° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

11 November 2005

Date of mailing of the international search report

02.01.2006

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IN2005/000037

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BRADLEY PHIL ET AL: "BETAWRAP: Successful prediction of parallel beta-helices from primary sequence reveals an association with many microbial pathogens " PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol. 98, no. 26, 18 December 2001 (2001-12-18) , pages 14819-14824, XP002350912 ISSN: 0027-8424 the whole document	1-13 , 18-21
A	FINLAY R BRETT ET AL: "Common themes in microbial pathogenicity revisited" MICROBIOLOGY AND MOLECULAR BIOLOGY REVIEWS, vol. 61, no. 2, 1997, pages 136-169, XP002350913 ISSN: 1092-2172 the whole document	1-13 , 18-21
P,X	SACHDEVA GAURAV ET AL: "SPAAN: a software program for prediction of adhesins and adhesin-like proteins using neural networks" BIOINFORMATICS (OXFORD), vol. 21, no. 4, 15 February 2005 (2005-02-15) , pages 483-491, XP002350914 ISSN: 1367-4803 the whole document	1-13 , 18-21
E	WO 2005/057464 A (COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH; BRAHMACHARI, SAMIR, KUM) 23 June 2005 (2005-06-23) the whole document	1-13 , 18-21

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IN2005/000037

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-13, 18-21

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1: claims 1-13, 18-21

A computational method for identifying adhesin and adhesin-like proteins comprising the steps of claim 1.

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Invention 2-275: claim 14

A set of 274 annotated genes encoding adhesin and adhesin-like proteins, having seq. id nos. 385 to 658.

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Invention 276-380: claim 15

A set of 105 hypothetical genes encoding adhesin and adhesin-like proteins, having seq. id nos. 659 to 763.

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Invention 381-659: claim 16

A set of 279 annotated adhesin and adhesin-like proteins, having seq. id nos. 1 to 279.

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Invention 660-764: claim 17

A set of 105 hypothetical adhesin and adhesin-like proteins, having seq. id nos. 280 to 384.

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### Information on patent family members

PCT/IN2005/000037

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005057464 A	23-06-2005	US 2005136480 A1	23-06-2005